Beliefs and Behaviors Related to Environmental Tobacco Smoke (ETS) Exposure in the Home: Cultural Differences between Francophones and the Rest of the Canadian Population

A Thesis Submitted to the College of Graduate Studies and Research in Partial Fulfillment of the Requirements for the Degree of Masters of Science in the Department of Community Health and Epidemiology University of Saskatchewan Saskatoon

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ABSTRACT

This study explored how cultural heritage might affect people's beliefs, attitudes, and behaviors toward Environmental Tobacco Smoke (ETS), which in turn affected actual ETS exposure. It used data from the 2001 National Survey on Environmental Tobacco Smoke in the Home. It compared two cultural groups: Francophones and the rest of the Canadian population (RCP), and found that Francophone nonsmokers had a significantly higher ETS exposure than the RCP (19.3% vs. 8.5%). The difference was much greater than the difference in smoking prevalence for the two groups (26.2% vs. 22.4%).

The study found Francophones scored lower than the RCP in almost every aspect of ETS-related beliefs, attitudes, and behaviors. They were less likely to believe ETS to be harmful and less supportive of ETS-control policies. They were less likely to have done something that reduced ETS exposure at home. In both cultural groups, smokers scored lower than nonsmokers in ETS-related beliefs and attitudes. However, the difference between the two groups remained significant even if the comparisons were done within smokers and nonsmokers.

The most significant finding of the study was that Francophones were more likely to trust those so-called ETS-reduction strategies that appeared to be effective but were not in reality (e.g., opening the window when someone smokes). Moreover, there was a statistically significant interaction between smoking status and cultural heritage: fewer nonsmokers than smokers within each cultural group believed that these

strategies were really effective, but the difference between the nonsmokers and smokers was significantly smaller for Francophones than that for the RCP. Therefore, the tendency to trust ineffective ETS-reduction strategies, especially among the nonsmokers, explained why Francophones were significantly less likely to adopt strategies that would actually reduce ETS exposure.

These results suggest that in order to move ETS policies forward and to effectively reduce ETS exposure among Canadian nonsmokers, the key strategy is to mobilize the nonsmokers to be less tolerant of ETS and more persistent in only allowing smoking to occur outdoors. This will not only help protect nonsmokers from the harm of ETS, but will eventually help smokers to quit smoking.

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Dedicated to my wife, Ronghua Liang, my son, Chuanyan Zhu

My mother, Liangqing Fu, and my father, Shiyu Zhu

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DISCLAIMER

This study used the data from the 2001 National Survey on Environmental Tobacco Smoke (ETS) in the Home, which was conducted by the Ontario Tobacco Research Unit (PI: Dr. Roberta Ferrence) and funded by the National Cancer Institute of Canada (NCIC). Field work was carried out by the Institute for Social Research (ISR), York University between June 12, 2001 and January 16, 2002. The interpretation and conclusions contained herein do not necessarily represent those of the aforementioned contributors.

1. INTRODUCTION

It is well known that cigarette smoke contains numerous harmful chemicals and that smoking is responsible for a large number of premature deaths by causing cancers, heart diseases and many other diseases.[1-5] The worldwide smoking-related death toll was estimated to be 3 million per year in the 1990's, and will increase to 10 million by the year 2025, with many of them living in developing countries.[6] In North America, approximately 440,000 Americans[6-8] and 48,000 Canadians die from smoking-attributable illness each year.[9, 10] While most of these people died because they smoked for many years, some of them were nonsmokers who died from being exposed to environmental tobacco smoke.[11]

Environmental tobacco smoke (ETS), also referred to as secondhand smoke, is a mixture of the smoke given off by the burning end of tobacco products (side stream smoke) and the smoke exhaled by smokers (mainstream smoke).[12, 13] ETS has similar harmful contents to that of first-hand smoke. Many studies have shown that ETS is a risk factor for cancers,[2, 14, 15] heart diseases,[2, 16] and respiratory disorders,[2, 17, 18] among nonsmoking adults. ETS is even more harmful to children. Studies have shown that ETS increases children's risk of developing respiratory disease,[19-22] middle ear disease,[19-21] sudden infant death syndrome (SIDS),[19, 20, 22] cardiovascular conditions,[20-22] and childhood cancers.[19, 21, 22] Based on the collective evidence, the US Surgeon General's Report, and the International Agency for Research on Cancer (IARC)

conclude that ETS is a risk factor for cancers and other diseases. The difference between first-hand and second-hand smoke is that the odds ratio for the risk is smaller for the latter, but the effects are statistically significant.[11, 23]

Significant proportions of nonsmokers around the world are affected by ETS exposure. For example, 51.3% of nonsmoking women in China are exposed to ETS[24] and 28.3% of nonsmokers in South Africa (23.2% of males and 30.5% of females) reported being exposed to ETS.[25] In Canada, a 1996/97 survey showed that regular smoking occurred in 33% of homes with children under age 12.[26] Although this has dropped to 21% during the 2001 tobacco survey, this still represents over 800,000 Canadian children who were regularly exposed to the hazards of second-hand tobacco smoke in their homes.[27] Thus, reduction of ETS exposure, especially children's exposure to ETS, is an urgent public health task.

Nonsmokers' exposure to ETS naturally correlates with the smoking prevalence in the community; the more people who smoke, the more likely nonsmokers will be exposed to ETS.[22] However, the difference between ETS exposure in different communities is not completely explained by the differences in smoking prevalence.[28] For example, studies in five Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden) found that even though the prevalence of smoking households is quite similar among these countries, there is a great difference among them with regard to children's exposure to ETS. Finnish parents were more likely than all other Nordic parents to protect their children from ETS; the situation was the worst in Denmark and Iceland.[29] While it is not well understood why there is such a discrepancy in ETS among these countries, the study points to the potential differences in parental beliefs on ETS, which

could have a significant influence on the smokers' behavior in their homes.[29-31] Other studies on ETS have suggested that cultural background can also be a significant factor which influences ETS exposure.[32, 33] For example, ethnicity is a significant predictor of ETS, even after taking into account the fact that different ethnic groups have differences in smoking prevalence.[32]

Similar data patterns can be found in Canada. For example, differences in smoking prevalence in Canadian provinces in 2001 exist, particularly between British Columbia and Quebec. The former is seven percentage points lower: the smoking prevalence was 17% and 24% for British Columbia and Quebec, respectively.[34] The ETS exposure for children between these two provinces, however, is much larger. Here there is a 19% percentage point difference: British Columbia had 10% of homes with young children who were exposed to ETS while Quebec had 29%.[27] It is clear that some other factors, in addition to the difference in smoking prevalence, are responsible for the large difference in ETS exposure between these two provinces. To identify these factors and to understand how they influence smokers' behavior will help us design effective interventions to reduce ETS in Canada.

This study aims to examine how much people's beliefs and behaviors in regards to ETS are influenced by cultural factors. Cultural heritage of a given group of people can affect attitudes and health behaviors in many ways. In Canada, it is generally known that Francophones have a higher smoking prevalence than Anglophones.[35-37] However, few studies have examined the differences between these two groups in terms of their beliefs, attitudes, and behaviors towards ETS. The beliefs and attitudes of both smokers and nonsmokers in a given community are important factors. Changes in

beliefs and attitudes within the community need to occur before smokers change their smoking behavior around nonsmokers.[32, 38] If we want to develop effective interventions to reduce ETS exposure, an in-depth analysis is needed in order to understand the underlying factors affecting behaviors related to ETS. Thus, this study will go a step further to examine how the smokers and nonsmokers might be different both within each language group as well as between the two groups. We will discuss the results in the context of literature on ETS and with consideration of some successful tobacco control programs (e.g., California) that have dramatically changed the ETS exposure rate in the last 10 years.[39]

2. OBJECTIVE AND RESEARCH QUESTIONS

The objective of this study was to explore how cultural heritage may affect people's beliefs, attitudes, and behaviors toward ETS, which will in turn affect actual ETS exposure.

The study had two main questions:

(1) Given that Francophones are known to a have higher smoking prevalence,[35, 36, 40] what are their beliefs, attitudes and behaviors toward ETS as compared to the rest of the Canadian population?

(2) Given that studies found that smokers and nonsmokers have different perceptions of the risk of ETS,[32, 38, 41] how will cultural heritage interact with the smoking status? In other words, is the difference between smokers and nonsmokers in beliefs, attitudes, and behaviors towards ETS the same in each cultural group?

One specific hypothesis will be tested in this study, and this hypothesis is based on the review of literature on ETS, especially on the regional difference that has been reported in other studies.[28, 42] The hypothesis is that the difference (in belief or attitude) between nonsmokers and smokers among Francophones will be smaller than the difference between nonsmokers and smokers among the rest of the Canadian population. Statistically, this will translate into a significant interaction. We will discuss how we arrive at this hypothesis in the ensuing literature review section.

3. LITERATURE REVIEW

The literature review is approached in the following manner. First, we will review the literature on the negative impact of ETS on nonsmokers' physical/mental health. Second, we will briefly review the medical costs associated with treating ETS-related diseases. Third, we will examine the factors that are associated with ETS exposure. Fourth, we will review past success in ETS control and the lessons learned. Finally, we will discuss the implications of the ETS literature on the present study, which aims to understand the difference between Francophones and the rest of the Canadian population in their ETS-related beliefs, attitudes, and behaviors. A specific hypothesis is generated at the end of the section that will be tested in this study.

3.1 Impact of ETS on Nonsmokers' Health

Epidemiological studies on the effects of ETS on nonsmokers' health started much later than the studies on the effects of smoking on smokers'. However, it is now well established that exposure to ETS is responsible for a variety of diseases among nonsmokers.[2, 12, 22] Some of the diseases caused by ETS are more obvious, given what the scientists already knew about the effects of smoking on smokers, such as lung cancer and cardiovascular diseases.[11, 23] Others are less obvious because many who are exposed to ETS are children who have not reached smoking age yet. In fact, ETS exposure could occur before the child is born.[12, 43-46] There are more and more studies

coming out every year that show that ETS can have a highly negative impact on children's health and mental development.[22]

3.1.1 ETS as a Cancer Risk Among Adults

Strong evidence that exposure to passive smoking increases the risk of adults developing fatal diseases first emerged in 1981.[47] Hirayama's study established that nonsmoking wives of heavy smokers had a higher risk of developing lung cancer than those of nonsmokers. Also, wives of men who smoked more than 20 cigarettes per day were more than twice as likely to die from lung cancer than those married to nonsmokers.[47] Many more case-control studies later confirmed that ETS exposure increased the risk of lung cancer for nonsmoking spouses of smokers.[14, 15, 48-54]

A recent publication that pooled two large studies of secondhand smoke and lung cancer showed there is clear dose-response relationship between lung cancer risk and duration of exposure to secondhand smoke for the three main sources of exposure: spousal, workplace and social. The estimate of the increased risk was 18% in those who were ever exposed to spousal secondhand smoke and was 23% for those submitted to long-term exposure, but the confidence intervals were very large.[55] A prospective cohort study, however, did not find an increased risk of lung cancer with exposure to environmental tobacco smoke exposure. The participants were enrolled in late 1959 and followed until 1998. Particular focus was on the 35,561 never smokers who had a spouse in the study with known smoking habits.[56] However, the American Cancer Society pointed out that the cited study had many scientific flaws. The first flaw was that the study was only based on a small subset (10%) of the American Cancer

Society's Cancer Prevention Study I (CPS-I). The second flaw was that participants were enrolled in 1959, when exposure to secondhand smoke was so pervasive that virtually everyone was exposed to ETS, whether or not they were married to a smoker. The third flaw was that study participants were, on average, 52 years old at enrollment. Many spouses who reported smoking in 1959 would have died, quit smoking, or ended the marriage during the 38-year follow up, yet their surviving partners are still classified as "exposed" to ETS in this analysis.[57] The International Agency for Research on Cancer (IARC), an international organization that summarizes all the scientific literature, has concluded, that the link between ETS and lung cancer is well established.[58]

Lung cancer is the most studied cancer for ETS exposure. However, since Hirayama's study, considerable epidemiological study has also established that long-term exposure to ETS increases the risk for developing various others cancers, including head and neck cancer,[59] pharynx and larynx cancer,[54] bladder cancer,[60] and cervical cancer.[61] However, the link between ETS and breast cancer in women who are nonsmokers is less clear. While some studies showed that ETS is a risk for breast cancer,[62, 63] the International Agency for Research on Cancer (IARC) concluded that there is not enough evidence that ETS is associated with the development of breast cancer.[58, 64, 65]

3.1.2. ETS as a Risk for Other Diseases in Adults

Other adult diseases that have been attributed to exposure to ETS include respiratory illness,[2, 17, 18, 54, 66] ischemic heart disease,[2, 10, 47, 54, 66-73] and stroke.[16, 66, 70] A

meta-analysis study stated that the relative risk for coronary heart disease is 1.25 [RR=1.25 95% CI: 1.17-1.32] in non-smokers exposed to ETS compared with non-smokers not exposed.[74] Passive smoking was consistently associated with an increased relative risk of coronary heart disease in cohort studies [RR=1.21 95% CI: 1.14-1.30] and in case-control studies [RR=1.51 95% CI: 1.26-1.81]. A significant dose-response relation was identified, with respective relative risks of 1.23 and 1.31 for non-smokers who were exposed to the smoke of 1 to 19 cigarettes per day and those who were exposed to the smoke of 20 or more cigarettes per day, as compared with nonsmokers not exposed to smoke.[74] Many studies demonstrate that ETS exposure for women will increase the risk of spontaneous abortion and prenatal death.[12, 45, 46]

3.1.3 ETS as a risk for Asthma and Wheezing in Children

Children are more likely than adults to suffer health effects from ETS exposure because their bodies are still in developmental stages.[12, 22, 75] Moreover, young children are often not able to remove themselves from exposure, making it harder for them to reduce the exposure.[76, 77] A prospective birth cohort study in Hong Kong has shown that high hospital admission rates, for respiratory illness, febrile illness, and other illness, were significantly more prevalent among infants exposed to ETS either before or after birth.[78] Gilliland FD et al studied the effects of maternal smoking during pregnancy and childhood ETS exposure on asthma and wheezing in 12 Southern California communities. Children who had been exposed to in utero maternal smoking were three times [OR=3.4, 95% CI, 1.4 to 7.8] more likely to have visited hospital emergency room due to wheezing. Moreover, current ETS exposure was associated

with wheezing and emergency room visits within the previous year at a rate 1.9 [OR=1.9, 95% CI, 1.2 to 3.0] compared to unexposed children.[79] Many other studies also reported that children with smoking parents would be more frequently used pediatric emergency department services and were more frequently admitted to hospital due to asthma or wheezing than children not having smoking parents.[79-84]

3.1.4 ETS as a Risk for Other Health Problems in Children

Other diseases related to ETS exposure in children include tooth decay,[85, 86] sore throat,[87, 88] tract infections, such as upper respiratory illness,[87, 89] lower respiratory illness,[22, 90-92] cough,[87, 89, 93] phlegm,[88, 93] chronic bronchitis,[12, 46, 90, 94] pneumonia,[12, 46, 90] and middle ear infection.[22, 95-99] In addition, there is growing evidence that ETS exposure in children can have a significant impact on nasal and sinus function, and can be associated with acute and chronic rhinitis, snoring and a predisposition to develop allergies.[100, 101]

Etzel studied 132 children in a day care center to determine whether passive smoking was associated with an increased risk of middle ear effusion or with an increased number of days with middle ear effusion during the first 3 years of life.[96] In this study, the children were classified as exposed or not exposed to cigarette smoke on the basis of serum cotinine concentrations at one year of age. Middle ear effusion was diagnosed with the use of pneumatic otoscopy. The 87 children with serum cotinine concentrations ≥2.5 ng/ml had a 38% higher ear of new episodes of middle ear effusion during the first 3 years of life than the 45 children with lower or undetectable serum cotinine concentrations ($P<0.01$).[96]

Kraemer and colleagues reported that children who lived in households where more than three packs of cigarettes were smoked per day, were more than four times as likely to be admitted to the hospital for tympanostomy tube placement as were children whose parents did not smoke.[98]

Colley found a consistent gradient in the incidence of pneumonia and bronchitis in the child's first year of life in relation to the parents' smoking habits. Infants with two parents who smoked were more than twice as likely to have had pneumonia and bronchitis as were infants with parents who did not smoke.[102]

There are numerous studies that have demonstrated an association between maternal smoking and low birth weight (below 2500 g).[44, 103-107] In the US population, it is estimated that 21% to 39% of low birth weight births are attributed to maternal cigarette smoking. In addition, the incidence of low birth weight has risen with increasing maternal cigarette consumption.[105, 108]

Sudden infant death syndrome (SIDS), a term used to refer to the unexpected and unexplained death of an apparently well infant, has also been shown to be related to ETS.[12, 22, 46, 92, 97, 109] A number of cohort and case-control studies have documented a clear dose-related association between the level of maternal smoking and probability of SIDS.[92, 110]

Some research even reported that passive smoking causes childhood neoplasms, such as brain tumors, Lymphomas and Leukemia.[22, 111] Pettersson's study reported that young men with testicular cancer were more likely to have come from homes with maternal smoking during pregnancy.[112]

3.1.5 ETS as a Risk for Developing Cognitive Problems in Children

Effects of smoking during pregnancy on offspring cognitive development may be direct (i.e. effects on fetal brain development) or indirect (e.g. consequences of pregnancy complications). There are insufficient studies on this topic. While some have found significant associations between maternal smoking and offspring intelligence.[113] others have not.[114] For example, Yolton's study indicated a positive association between ETS exposure and cognitive deficits among children even at extremely low levels of exposure. Children with the highest serum cotinine levels achieved significantly lower performance scores on all four tests (math, reading, block design, and digit span) than did children in the lowest cotinine level.[115] There was also a dose-response relationship between maternal smoking and offspring intelligence. However, these studies were cross-sectional. Cross-sectional studies cannot assess the causal relationship between ETS and cognitive abilities. These studies did also not include measures of cognitive abilities of parents or of the quality of the home environment. Instead, they relied on maternal education, income, and marital status as surrogate markers in their analysis.[113, 115] A number of other studies also evaluated cognitive abilities and academic achievement. The data in general suggest that maternal smoking may have long-term consequences for offspring's intellectual development.[116-118] For example, significant differences were found in reading achievement and social adjustment at age 7 between children whose mothers smoked during pregnancy and children whose mothers did not.[117] However, some of the results have to be taken with caution because many variables cannot be controlled.

3.2 The Medical Costs of ETS

Medical costs for treating children's diseases are often substantial. Therefore, there are many studies documenting that ETS increases the medical costs associated with treating children with ETS-attributable diseases.[22, 119] In a 1997 study, Aligne and Stoddard estimated that the costs associated with treating children with ETS-attributable diseases ranged from $703 million for all respiratory conditions for children under six to $897 million for a similar set of conditions in a broader age group. Their study also provided an estimate of the value of loss of life due to low birth weight and SIDS for infants and asthma deaths among children. Based on $1.3 million per child, their estimate is $7.1 billion for infants and 2.1 billion for children.[119, 120]

There has also been a significant amount of work done to estimate smoking attributable risks and costs in Australia. One estimate suggests that approximately 10% of the direct costs of tobacco abuse are related to ETS. Collins reports that using the 10% rule and calculated to 1997 US dollars, this would result in approximately $135 million in health care costs due to ETS in Australia.[119, 121] This 10% approximation for the costs related to ETS is also used in the study of smoking attributed morbidity costs in New South Wales by Doran. When all direct costs were converted and calculated to 1997 US dollars the ETS costs equaled $50.5 million. Neither Doran's nor Collins' studies, however, appear to include ETS costs related to infants and children.[119, 122]

The available data on costs show that in Canada the necessary medical care costs related to ETS in the 0-14 age group were $239.5 million in 1997 US dollars.[119, 123] In Hong Kong, a prospective, population based birth cohort study showed the population attributable health care costs associated with ETS exposure in utero and

postnatal at home were $3.04 million in hospital admissions and $0.44 million in outpatient consultations, totaling $3.48 million annually. This represents 8.8% of total direct medical costs.[76] In short, there is a large amount of money that can be saved if ETS is eliminated.

3.3 Factors Associated with ETS Exposure

There are multiple factors that are associated with ETS exposure. In an epidemiological sense, what are described in this section are risk factors for ETS. The list of factors examined here is not exhaustive and none of them completely predicts ETS exposure. However, a compound of risk factors can lead to especially high ETS for particular groups. For example, young children living in a poor family that has multiple smokers in the same household would be expected to have a high ETS.[75]

3.3.1 Smoking Prevalence and Level of Cigarette Consumption

Smoking prevalence is obviously the most significant risk factor for ETS exposure. The higher the smoking prevalence for a particular group, the higher the ETS exposure rate for the nonsmokers associated with that group.[28, 124] For example, the smoking prevalence of Chinese males, aged 35-74, is 60.2%, so among nonsmokers, 51.3% of women, aged 35-74, reported exposure to ETS at home.[24] The number of adults smoking in the house is also strongly associated with the hours of ETS exposure at home.[125] The number of cigarettes consumed at home is also a risk factor for ETS.[126] Obviously, the more cigarettes smoked in the house, the more likely people are to be exposed to ETS. Epidemiological studies have shown that a verbal report of the

number of cigarettes smoked in the house is a good enough measure to established a significant dose-response relationship between diseases and consumption level.[47, 78, 98, 108, 113, 115]

3.3.2 Maternal Smoking

When it comes to children's exposure to ETS, maternal smoking is often the primary source, except in those places such as China where most women do not smoke.[90, 94, 97, 127-129] Population surveys in England showed that the geometric mean of saliva cotinine concentrations (ng/ml) in nonsmoking children aged 11-15 years were 0.71 [OR=0.71 95% CI: 0.56, 0.90] if only the father smoked and 1.47 [OR=1.47 95% CI: 1.16, 1.86] if only the mother smoked.[130] It showed moderately strong and consistent linear relationships with consumption level of mothers and urine cotinine measures of their infants and children r=0.5 (r^2=0.25 P<0.05).[131] The urine cotinine levels of breastfeeding infants of mothers who smoked were also significantly higher than levels found in infants of nonsmoking mothers.[90, 132] Cook and Strachan also did a meta-analysis of the relationship between bronchial reactivity (BHR), as assessed by challenge tests, and found that exposure to ETS (largely maternal smoking) in 10 populations was correlated with a small but real increase in bronchial hyper responsiveness amongst the children of smoking mothers [OR 1.29, 95% CI: 1.10 to 1.50].[127]

3.3.3 Demographic Factors

Age

One significant predictor of maternal health habits is age, with older mothers having better hygiene. Smoking in the same room with the baby is more frequent among younger mothers.[90] On the other hand, studies found that younger smokers, between the ages of 18 and 34 years old, were more likely to have home or car smoking bans than older smokers.[133, 134]

Children's age is one of the ETS risk factors as well, with older children less likely to be exposed to ETS. The decrease of exposure with increasing age has been attributed to the higher proportion of time spent outdoors by older compared to younger children.[135-137]

Education and Socioeconomic Level

As the case with the smoking prevalence, ETS exposure increases as educational level decreases.[138-140] This is especially true of the educational level of mothers of young children.[28] Numerous studies have found that parents who are less educated lack knowledge of ETS' influence on children and their children are more likely to be exposed to ETS.[28, 30, 31, 79, 90, 141-145]

Parents who are unemployed or low income are also more likely to have children exposed to ETS.[28, 93, 138, 144] Smokers who are in receipt of unemployment insurance or who have low incomes have higher stress and are more likely to smoke heavily. They are more likely to live in small housing units, usually apartments, with limited access to the outdoors, few rooms, and shared ventilation systems. All these make them more likely to be exposed to ETS.[75, 128 126, 146]

Marital Status

Marital stability has also been found to be a predictor of risk for ETS exposure for children. Children in single-parent families may be at higher risk of exposure to ETS than children in two-parent families.[31, 75, 133, 138, 141] Single mothers who smoke and have young children also face a number of other challenges, including high rates of depressed mood, frequent experience of stressors related to low income, high rates of unemployment, low social support, confined living accommodations and low levels of educational attainment.[22, 75, 141]

Gender

Gender is a significant predictor of ETS for groups that have large differences in smoking prevalence. In most of the Asian countries, there is a dramatic difference in smoking prevalence between genders.[24, 147, 148] In China, for example, the smoking prevalence among men is about 63%, while the smoking prevalence among women is about 3.8%.[129] Thus, nonsmokers who are exposed to ETS are mostly women.[16, 129, 149] Also, women are more likely to work in certain jobs with significant exposure to ETS, such as restaurants and bars. If the work place does not have a policy banning smoking, then they will be exposed to ETS long-term.[16, 25, 149]

Ethnicity

Ethnicity is associated with the level of ETS exposure not only because it is associated with smoking prevalence but also because it is often an index for cultural heritage. Ethnicity is often associated with socioeconomic status as well. Many studies have shown ethnicity is a strong predictor for ETS exposure,[32, 33, 150] but often ethnicity is a proxy measure of some other factors. For example, Blacks in the US generally are more likely to be exposed to ETS than Whites.[151, 152] But some studies adjusted by SES

indicators in their analysis and found that Blacks and Whites are not significantly different from each other in ETS exposure.[139] Similarly, American Indian/Alaskan Native women are often found to have the highest ETS exposure compared to other ethnicities. However, the differences become much smaller if the analysis is adjusted for the social and economic variables.[140]

Perera's study (2003) showed that self-reported ETS and plasma cotinine differed by ethnicity, with Blacks being significantly more likely to report ETS exposure than others.[151, 153] Some studies showed that even when the self-reported ETS exposure is lower, Black children often have a higher serum and hair cotinine levels.[115, 137, 146] This may be due to the difference in nicotine metabolism of different ethnic groups, [126, 154] and it may not due to reporting bias.[155]

Although a large percentage of nonsmokers in Asia are exposed to ETS,[24, 147, 148] Asians living in North America tend to have lower ETS exposure than other groups. Similarly, Hispanic children and adolescents in the US were more protected from secondhand smoke than were other racial/ethnic groups.[28, 39] Thus, ethnicity is not always a good predictor of ETS, especially among the new immigrants. Sometimes, it is the cultural heritage of a particular ethnic group that interacts with the tobacco control culture in the region where the people live that determines the ETS exposure rate. Thus, Asian women who live in California have a lower ETS exposure than Whites,[39, 156] while Asian women in Asia have higher ETS exposure.[24, 129] On the other hand, such differences may exist with groups that belong to the same ethnicity (e.g. all Caucasians) but have different cultural heritages, as will be discussed in the next section.

3.3.4 Culture, belief, smoking behavior and ETS

Culture is an important determinant of health behavior, including smoking and ETS. There are many definitions of what culture is. Some sociologists working in the field of health define culture as "the shared meanings (ideas, concepts, and knowledge) that include the beliefs, values and norms that shape standards and rules of behavior as people go about their every lives.[157] Others emphasize the enduring nature of culture, indicating that culture does not change easily. Bates and Plog define culture as "the system of shared beliefs, values, customs, behaviors, and artifacts that the members of society use to cope with their world and with one another, and that are transmitted from generation to generation through learning."[158] Both definitions of culture include a belief system that will shape the individual behaviors as well as the collective behaviors of the people in that culture. The tobacco use behavior is no exception.

Canada is often described as a multicultural nation, which means that Canadians are not of any one cultural background, race or heritage. Instead, Canadians today reflect a vast diversity of cultural heritages and racial groups. This multicultural diversity is a result of centuries of immigration. The Francophones are the second large heritage culture in Canada.[159, 160] Francophone is defined by language and ethnicity. The preference in language use is related to socio-cultural traditions.[35, 159] Sheldon and Parker have pointed out the research literature often narrowly represents culture using ethnicity and race.[161]

It is well known that Francophones and Anglophones in Canada have different cultural heritages. This difference is associated with many aspects of health behavior. For example, Francophones were more likely than Anglophones to engage in certain

risky health behaviors related to alcohol use and to suffer from certain problems where alcohol use plays a key role.[162] Francophones were also significantly more likely than Anglophones to smoke cigarettes in their lifetime, to smoke on a daily basis, to initiate daily smoking before the age of 16 and to smoke daily for lengthier periods of time.[35, 36, 40, 163]

In Canada, the grouping of cultural heritage and smoking behavior is also confounded with the place of residence. Quebec has the largest French-speaking population and the highest smoking prevalence.[37, 40] Quebec also has the highest ETS exposure and more tolerance of smoking in public places.[67, 164, 165] Outside of Quebec, Ontario has the largest population of French-speaking people.[35] Within Ontario, past month exposure to ETS at home varies widely, with estimates ranging from 18% in the Waterloo Region health unit area to 36% in the Porcupine health unit area. In general, exposure is lower in Southern Ontario and higher in Northern Ontario.[166] Statistics for Ontario show that there are many more Francophones in Porcupine than Waterloo. In North-east Ontario, 25.1% of the populations are Francophones. The comparable percentage in South-west Ontario is 2.3%.[167]

As has been mentioned before, the difference in ETS between various groups cannot be completely attributed to the difference in smoking prevalence. This is true also when it comes to explaining the difference in ETS between Francophones and Anglophones in Canada. There might be other cultural elements that will affect the beliefs and attitudes of the two groups when it comes to adopting various measures to control ETS, such as asking smokers to smoke outside.[75] This is the focus of this study and we will discuss this in more detail in the section on the beliefs and attitudes of

smokers versus nonsmokers and how this will affect their behaviors to control ETS. (section 3.5)

3.4 Interventions to Reduce ETS

There are three main indoor areas where nonsmokers can be exposed to ETS: the work place; other places where people gather such as restaurants and bars; and, home.[39] Most efforts to reduce ETS focus on the first two places by making laws that will ban smoking where people work.[168, 169] It is much harder to make laws that will ban smoking at home. However, studies have shown that the worksite policies will affect people's beliefs about ETS, and as a result many will start to ban smoking at home voluntarily.[170, 171] It may take some time for the public policies to affect people's practices at home, but it has been shown to be effective in places such as California, which has had a statewide ban on worksite smoking for more than 10 years.[39]

3.4.1. Worksite Policies on ETS and its Effects

Numerous studies have indicated that policy and legislation to prohibit smokers from smoking in public places, such as the worksites or restaurants, can significantly reduce the ETS exposure for nonsmokers.[39, 42] The early example is California. From 1990 to 1999, marked advances were made in providing guaranteed clean indoor air for nonsmokers. In 1999, about 95% of California's indoor workers reported that their workplace was smoke-free. Nearly three quarters of Californians have smoke-free homes, including nearly half of all current smokers, and more than 80% of children and adolescents are protected from exposure at home.[39, 42] Other states in the US, such as

Massachusetts, have followed California and they all have confirmed that ETS policies have a large effect on reducing ETS in the work place.[172, 173]

Australia is another successful example where public education programs have changed smokers and nonsmokers beliefs about ETS. This not only has led to reduction of ETS at work,[174] but it has also affected their practices at home. Studies have reported that "not smoking in the presence of children" rose from 14% in 1989 to 33% in 1996.[175] The proportion of guests who are discouraged from smoking in the house rose from 27% in 1989 to 53% in 1997. Additionally, the proportion of smokers who reported always smoking outside the home also rose from 20% in 1995 to 28% in 1997.[175]

There are encouraging data in Canada as well. Ninety one percent of those who worked in the last 12 months reported some kind of smoking restriction in the workplace. Of this total, 71% identified that their workplace was completely smoke free in 2004 (compared to 40% of workers in 1994).[176] From 1994 to 2004, ETS exposure in the worksite was reduced from 60% to 29%. Moreover, just as in California and Australia, changes in ETS in public places are associated with change in ETS exposure at home. The ETS exposure for children, 0-11 years of age, at home has been reduced from 26% in 1999 to 12% in 2004.[176]

An important finding of these studies is that although partial smoking restrictions may protect employees more than no restrictions,[177] only complete smoking bans are truly effective in preventing exposure to ETS at work.[178] For example, in restaurants, no significant difference was found in nicotine levels between smoking and nonsmoking areas. The restaurants without separation between smoking and

nonsmoking areas had even higher nicotine levels than those with separate smoking and nonsmoking areas.[179, 180] Similar results have been reported in other worksites such as psychiatry wards, which shows that only complete bans can effectively reduce ETS exposure for workers.[178]

It should be mentioned that ETS policies not only protect nonsmokers from exposure to second-hand smoke, they also help reduce the consumption level of smokers because smokers now find it harder to smoke everywhere.[169, 170] Thus, in the long run, it is possible they will also help smokers because the health effect of smoking is dose-responsive, especially if there is a large reduction in daily consumption.[181] Moreover, studies have shown that restrictions can help smokers quit as the restrictions can increase their motivation to quit and prevent them from relapsing if they try to quit.[170, 182] Such effects on quitting are even greater for home restrictions on ETS.[171]

3.4.2 Home Restriction on Smoking and Its Effects

Home restrictions on smoking might be the most important intervention on ETS and the rate of home bans has been increasing in many countries and regions. It is especially prevalent in places where public policies against ETS have been implemented for extended periods of time, such as California.[171] Many studies reported that the restriction of smoking in the home significantly reduced ETS exposure to nonsmokers.[125, 134, 138, 145, 175, 183, 184]

One significant finding of these studies on home bans is that, with few exceptions,[138] a complete ban on smoking (meaning smoking outside of the house only) is the only measure that can effectively reduce ETS.[134, 145, 183, 184] Partial measures, such

as smoking in another room away from the child or opening windows when smoking, are not effective.[134, 145, 183-185] On the other hand, if the household only allows smoking outside, then the ETS exposure of the children in the household is almost at the same low level as that experienced in households with no smokers.[125]

Health Canada has reported that the public still has many misconceptions about how to protect children even today. For example, electronic air cleaners, air purification systems and "smokeless" ashtrays do not have the ability to adequately clear the air. They quickly clog and must be maintained to be effective. Confining smokers to one room in a house does not work, since the smoke will disperse throughout the area. Opening a window is not effective either – depending which way the wind is blowing, it can also direct the smoke straight to a nonsmoker.[186] Thus much work needs to be done to educate the public and to establish appropriate policies that can effectively reduce ETS exposure among nonsmokers, especially children.[75]

There are three important lessons learned in the attempts to reduce ETS through external intervention. (1). Public policy can affect people's perception of the risk of ETS. Thus, where there are strong public policies against ETS, there are also a higher percentage of home bans on smoking.[39, 170] Thus, even if there is no law banning smoking at home, people will gradually change their perception if there is consistent implementation of public policies.[42, 175] (2). Smokers may not always like the restrictions, but they are eventually helped by the restrictions. Studies have shown that restrictions, especially the home bans, are correlated with higher successful quitting rate among the smokers who live under the ban.[170, 171, 187, 188] Given that most smokers want to quit smoking, measures that help quitting can win many smokers' approval. Indeed,

studies have shown that many smokers support restrictions in the work place.[39] This is especially true with home bans, which must have smokers' cooperation or they will likely not get implemented. (3). Nonsmokers are a significant factor in the successful implementation of any restrictions.[188] Many studies in the US have shown that Asian and Latino Americans are much more likely to have complete home bans on smoking. This is in part due to the fact that there are more Asian and Latino Americans are more likely to have nonsmoking adult women in their households than other ethnic groups.[32, 39] The nonsmokers are more likely to believe that ETS is harmful, more likely to favor restriction on smoking to reduce ETS, and are probably more likely to take action to reduce ETS than smokers will.[75, 125, 175]

3.5 Relationship between Beliefs, Attitudes, and Behaviors

Ajzen and Fishbein developed a theory of reasoned action as a conceptual framework to understand the relationship between beliefs, attitudes, and behaviors. This theory has been applied extensively in the study of health behavior. The theory assumes that beliefs are underlying a person's attitudes and subjective norms, and the beliefs and attitudes ultimately determine intentions and behaviors.[189] Some studies have shown the model derived from this theory to be very useful and valid while others have found it problematic. Although there were problems arising from applying the theory to behavioral prediction, the theory is still considered the "reference point" for most new models.[190] Thus, the 2001 National Survey on Environmental Tobacco Smoke (ETS) in the Home that was analyzed in this thesis asked respondents a series of questions on their beliefs and attitudes towards ETS, in addition to their actual ETS

reduction behaviors. The underlying assumption is that there is a relationship between these questions and that appropriate analysis can help us understand it, which in turn, can inform the design of future interventions to reduce ETS.

A study of smoking-related beliefs and behaviors of 21 countries found that the belief in the health benefits of not smoking significantly predicted smoking behavior in all 21-country samples.[191] There was a close and reliable association between health beliefs and behaviors that was maintained despite wide variation in cultural context across the 21 countries: the higher the beliefs in the benefits of nonsmoking, the lower the smoking prevalence.[191] Similarly, Borland's study of 2500 randomly selected adults each year from Victoria, Australia showed that respondents who believed that ETS is harmful to the health of nonsmokers were 3.2 times more likely to ask their visitors to smoke outside. After controlling for the presence of nonsmokers and children in the household, this belief had an impact on the probability of smokers smoking outside their home [OR=1.9, 95% CI: 1.2-2.9]. When looking at trends between 1989 and 1997, other factors such as smoking ban were recognized as also contributing toward reduction of ETS exposure in the home. A model that attributes behavior change to strongly held beliefs does not acknowledge external forces that play a role as well.[175]

One consistent finding in all these studies is that nonsmokers and smokers are significantly different in their beliefs and attitudes toward smoking and ETS. In terms of beliefs, nonsmokers are more likely than smokers to believe smoking is harmful and much less likely to believe smoking is beneficial.[191, 192] Nonsmokers are more likely to agree that "working in a smoking environment is harmful to my health".[143, 164, 193] In terms of attitudes, nonsmokers are more in favor of restrictions on smoking than

smokers.[166, 193] In terms of behaviors, there are fewer studies because nonsmokers and smokers do not share the same set of behaviors. It is the smokers who have to quit or smoke outside. Nonsmokers do not have to perform any of these behaviors because they do not smoke. However, nonsmokers could ask smokers to perform particular behaviors such as smoking in a different room or smoking outside. Studies have shown that parents who believe children's health is "affected a great deal" by people smoking in their home do significantly more to protect children from ETS exposure.[143, 145, 175] This supports the theory that beliefs and attitudes determine behaviors.[189].

Several studies on the difference in beliefs between smokers and nonsmokers are particularly interesting because they show that the differences change over time. For example, one study in Toronto found that between 1983 and 1988, the differences between nonsmokers and smokers on the health effects of ETS increased.[194] A more recent study in Ontario showed that the gap between the two groups in their attitudes towards smoke-free homes is narrowing.[195] This suggests an interesting dynamic that is worth careful research.

The most noteworthy study is the one that compares the smokers and nonsmokers' attitudes in California and the rest of the US states over a six-year period.[42] First, the study shows that California nonsmokers are much more likely to favor ETS policies than nonsmokers in the other states. Second, in California and in other states, nonsmokers are more likely to favor ETS policies than smokers. Third, over a six-year period, an even greater proportion of nonsmokers in California have become more favorable towards ETS policies, reaching 82% for those who have never smoked. Most interestingly, smokers in California also have dramatically changed their

attitudes during this period, with a majority of them (58%) also favoring ETS policies. Statistically, comparing state to state the change in California is greater than the change for other states in the same six year period.[42] What this paper makes clear is that with a huge percentage of nonsmokers favoring ETS policies in California, it eventually brought smokers on the side of favoring ETS policies as well (even a simple majority vote among the smokers in California would have favored ETS polices). The result is that California has the best results of nonsmokers being protected from ETS exposure.[39, 42]

The results of this study and the two Canadian studies mentioned earlier suggest that the gap between nonsmokers and smokers in their beliefs and attitudes towards ETS is a key indicator to analyze if we want to understand why any two groups are so different in their behaviors protecting nonsmokers from ETS. It seems that what is needed is to have the overwhelming majority of nonsmokers favoring ETS polices.[194, 195] This may first create a large gap between nonsmokers and smokers in their beliefs and attitudes because smokers change their beliefs later than nonsmokers. However, if the proportion of nonsmokers favoring ETS policies remains consistently high or continues to increase, then eventually smokers will come on the side of favoring ETS policies as well.[196] Thus, it is likely that we will see the gap between smokers and nonsmokers increase first before it will narrow (as there will be a ceiling effect on nonsmokers when the proportion favoring ETS policies reaches very high).[42]

This study will compare Francophones with the rest of the Canadian population in their attitudes, beliefs, and behaviors related to ETS. It is already known from previous studies that there is a large difference in ETS exposure rate between these two

groups, and that the difference is much greater than can be explained by the simple difference in smoking prevalence between the two groups.[27, 34, 67, 165] Therefore, the logical step is to look for differences in beliefs and attitudes towards ETS that might be responsible for the large differences in behaviors that will reduce ETS. Given what we know about smoking prevalence and beliefs and attitudes,[191] it is expected that Francophones will have a lower proportion of survey respondents whose beliefs, attitudes, and behaviors will favor ETS policies. However, the more interesting analysis will be to compare the smokers and nonsmokers within each group and between the two groups. It is hypothesized that the difference between nonsmokers and smokers among Francophones will be smaller than that among the rest of the Canadian population. This hypothesis is based on the conjecture that the proportion of nonsmokers who favor dramatic measures to reduce ETS is probably not as high as places like California.[39, 42] Therefore, the difference between the nonsmokers and smokers will have to widen first before it will narrow.[195] Given that Francophones are somewhat behind the rest of Canadians in their change of beliefs and attitudes towards smoke-free homes, then it is expected that the rest of the Canadian population will have a greater difference between nonsmokers and smokers at this time. Statistically, this will produce an interaction between the cultural heritage group and the smoking status. We may not know where we might find the interaction, but we assume interaction will occur either in their beliefs or attitudes or behaviors. It will most likely occur on those measures where the proportion of nonsmokers favoring ETS reduction strategies has not reached overwhelmingly high, yet.

4. METHODOLOGY

4.1 Research Design

This is a secondary analysis of data collected in a cross-sectional survey designed by the 2001 National Survey on Environmental Tobacco Smoke (ETS) in the Home that was conducted by the Ontario Tobacco Research Unit.[197] The principal investigator (PI) of the study is Dr. Roberta Ferrence, Director of the Ontario Tobacco Research Unit and the original research was funded by the National Cancer Institute of Canada (NCIC). Field work was carried out by the Institute for Social Research (ISR), York University between June 12, 2001 and January 16, 2002.

4.2 Population/Sample Frame

Random digit dialing (RDD) procedures were utilized to randomly select households and, within households, the most recent birthday selection method was used to identify respondents. A total number of 14,613 subjects were interviewed by using short form and/or long form questionnaires (5,009 subjects were interviewed with long form, see explanation in next section). The respondents were chosen from the 10 Canadian provinces (Newfoundland, Prince Edward Island (PEI), Nova Scotia, New Brunswick (NB), Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia (BC)). The percentages of subjects who participated in the study from the

five Canadian regions (Atlantic, Quebec, Ontario, Prairie, and Pacific) were 9.2%, 27.5%, 34.7%, 17.6%, and 11.0% respectively. The total response rate was 62 percent. The distribution of the survey sample corresponded closely to the proportion of the Canadian population in each province. The sample design is typically referred to as population proportional to size (PPS). Because the distribution was not perfectly PPS and there was some variation in the response rate, it was necessary to weight the data in the analysis so that the results would be representative of the population.

The distribution of respondents, aged 18-29, 30-54, and 55 and over was 22.5%, 53.1%, and 24.4% respectively. The distribution of respondents' education was less than high school (16.1%), high school level (59.3%) and BA or higher (24.7%).

4.2.1 Over Sampling of Smoking Household

The primary interest of the survey was to collect information that would allow for a better understanding of issues related to ETS in the home. However, it was estimated that about two-thirds of all households in Canada were non-smoking and less than half of the "smoking households" had one or more children (about 15% of all households). If a strictly population proportional to size (PPS) sample had been utilized, a very large sample of households where no one smoked would have been included. Given the fixed resources it was decided to complete short form questionnaires in most of the households without smokers; to complete long form questionnaires in most households that had smokers but no children; and to always complete long form questionnaires in households that had smokers and children. Respondents who completed all of the questions in the survey are defined as "long form" completions in

the data set. This produced the unequal probability of selection by household type, with the smoking households over-sampled.

4.2.2 Weighting for Unequal Selection

Because of the unequal probability of selection according to household type in the study design, weighting is necessary to obtain population estimates. For example, with exposure to ETS in the home and elsewhere, attitudes about smoking and ETS, and awareness of the health effects of ETS, etc. the data must be weighted, to adjust for the unequal probability of selection by household type, and other departures from a perfect PPS sample among the provinces. The current data set comes with a weighting procedure (NAT_WGT1 combines the household type, province, and household size).

4.3 Survey Implementation

Most of the interviewing (about 80%) was completed from ISR's centralized telephone facilities in Toronto using Computer Assisted Telephone Interviewing (CATI) techniques. Of the remaining interviews, about 20 percent of the total, approximately two-thirds of the interviews completed in Quebec were completed by Jolicoeur et Associes, a survey firm based in Montreal, who have completed work on behalf of the Institute for other studies. ISR provided Jolicoeur with detailed specifications on how to conduct the interviewing (including the provision of telephone numbers to call, use of the birthday selection method, the questionnaire, and call pattern for interviewers, etc.). Jolicoeur uses Voxco Interviewer Program for CATI, which is similar to the CATI system used at ISR.

A Random Digit Dialling (RDD) telephone survey was conducted. At most 12 calls were made for each number selected. Based on the smoking status of the respondent, the smoking status of others in the household, and the composition of the household (with or without children under 18 years of age), the interview was either concluded or the respondent was asked the remaining questions. Respondents who were only asked the items in the first three sections of the questionnaire are defined, in the data set, as having completed the "short form" questionnaire. Respondents who completed all the questions in the survey are defined as "long form" completions in the data set. In total over 14,613 households participated in the study and long form interviews were completed in 5,009 of these household.

4.4 Survey Questionnaire

Twenty-one sections comprise this survey. They include (1) Context, (2) Respondent's smoking status and behavior inside the house, (3) Household composition and smoking status of other household (HH) members, (4) Stages of change, (5) Reasons for quitting and relapse, (6) Work place restrictions, (7) Public place: restrictions on smoking in, (8) Attitudes, (9) Smoking in the household: respondent, (10) Smoking in household (HH): Other HH members, (11) Exposure for smokers, (12) Exposure for non-smokers, (13) Compliance with restrictions, (14) Influences on the implementation of rules, (15) Behaviors to reduce ETS in the home, (16) Effectiveness of strategies used to reduce ETS, (17) Vehicles: rules for, (18) Health risks resulting from ETS, (19) General family health, (20) Legal protection, and (21) Socio-

demographics. For this study, only sections related to attitudes, beliefs and behaviors to ETS exposure at home were analyzed.

4.5 Participant Definition

In the National ETS survey, participants were recruited by selecting the adult household member (18 years of age or older) who had the next birthday. The birthday selection method is used as it ensures a random selection of respondents as well as equal probabilities of selection, and it is a much less intrusive way to start an interview than more traditional methods which require a listing of household residents. This less intrusive approach makes it easier for the interviewer to ensure the respondent's cooperation.

4.6 Variables of Interest

This study focuses on the variables that are related to ETS and how it might differ among people of different cultural heritages. The following describes the survey questions related to each variable and gives definitions used in the analysis.

4.6.1 Cultural Heritage

In this study, the Francophone population was defined by two variable fields: language and ethnicity, as it has been done in previous studies.[35, 160]

The particular questions concerning language were as follows:

(1) "What is the language you first learned to speak and still understand?"

(2) "What language do you speak most often at home?"

For ethnicity, the question used was:

(1) “To what ethnic or cultural group do you belong?” If the respondent answered “Canadian”, the interviewer then asked,

(2) “In addition to being Canadian, to what ethnic or cultural group did you or your ancestors belong on first coming to this continent?” If the respondent did not state an ethnicity, the interviewer then asked what other languages were spoken and understood in order to determine ethnicity. If more than one ethnicity was stated, then question one was repeated.

- *Definition of Francophone*

  For this study, Francophones were then defined as:

  (1) French was first learned and is still understood and spoken most often at home, or

  (2) Respondents answered that they belong to French ethnicity.

- *Definition for the rest of the Canadian population*

  Individuals are not Francophones.

4.6.2 Socio-demographic Variables

These include gender, age, education, marital status, income, and region. These variables were examined individually as well as included as co-variates in the multivariate analysis.

4.6.3 Smoking status

These questions were used to define smoking status:

(1) “Have you smoked at least 100 cigarettes in your life?”

(2) “At the present time do you smoke cigarettes: daily, occasionally, or not at all.”

(3) “Have you ever smoked cigarettes daily?”

- *Definition of Current smoker:* Current smoker includes daily and occasional smokers. The variable is derived from the respondent’s answer to the questions:

  (1) Who smoked at least 100 cigarettes in their life, and

  (2) At the present time, they smoke daily or occasionally.

- *Definition of Never smokers:* Never smokers are those:

  (1) Who have not smoked at least 100 cigarettes in their life, and

  (2) Who currently do not smoke cigarettes.

- *Definition of Former smokers:* Former smokers are those:

  (1) Who smoked at least 100 cigarettes in their life, and

  (2) Who were no longer smoking when interviewed.

Since data analysis showed that never smokers and former smokers did not significantly differ in their beliefs, attitudes, and behaviors, the former smokers and never smokers’ categories were combined into one group called nonsmokers.

4.6.4 Actual ETS Exposure at Home

ETS exposure was defined by using questions assessing the types of household and smoking in the home.

The six types of household are:

(1) Non-smoking household, no kids,

(2) Non-smoking household, kids,

(3) Smoking household (some adults smoke), no kids,

(4) Smoking household (some adults smoke), kids,

(5) Smoking household (all adults smoke), no kids,

(6) Smoking household (all adults smoke), kids.

The assessment of smoking in the home was derived from the following question: "Do you or any of the other smokers in your home smoke cigarettes inside your home?"

- *Definition of ETS:*

  The ETS exposure, nonsmokers exposed to smoke, was defined as:

  (1) Smoking occurring in the home, and

  (2) Smoking households with nonsmoking adults or children.

4.6.5 Beliefs and Attitudes

There are two kinds of beliefs that will be examined. First, whether respondents believe ETS is a real risk to nonsmokers. Second, what they believe to be effective strategies to reduce ETS exposure. The survey asks very specific questions about whether ETS is a cause of particular diseases. It also asks very specific questions about whether a particular strategy is effective in reducing ETS.

Attitude refers to people's responses to general questions about ETS and about the policies or laws that could be used to reduce ETS.

The following list of questions is not necessarily in the order in which they appeared in the survey. They are arranged in this order in order to match the order in which they are presented in the results section.

4.6.5.1 Beliefs on Health Risk of ETS

These questions asked the survey respondents whether or not smoking is one cause, may be a cause, or is not a cause of the following health problem in nonsmokers.

(1) “What about lung cancer in nonsmokers?”

(2) “What about heart attacks in nonsmokers?”

(3) “What about breast cancer in nonsmokers?”

(4) “What about chest problems in children?”

(5) “What about problems in children’s ears?”

(6) “What about crib death or sudden infant death syndrome (SIDS)?”

Three answers are possible: ‘is one cause’, ‘may be a cause’, and ‘or is not a cause’. Anyone who answered ‘is a cause’ or ‘may be a cause’ is considered to believe that ETS is a risk for nonsmokers to develop the specific health problem.

4.6.5.2 Attitudes towards ETS and the Policies against ETS

The following questions are used in the analysis.

(1) “Nonsmokers have the right to a smoke free environment?”

(2) “Children get sick more often when people smoke regularly around them?”

(3) “Family doctors should advise parents not to smoke around children?”

(4) “There should be a law that says parents can’t smoke inside their homes if children are living there?”

(5) “There should be a law that says parents can’t smoke inside their car if children are present?”

(6) “Do you think the court should order the parents not to smoke in their home when their child has asthma?”

(7) “Smoking habits of parents should be taken into account when deciding child custody cases?”

(8) “Parents have the right to decide for themselves whether or not they smoke around their children?”

(9) “Restrictions gone too far, and do smokers need to start standing up for their rights?”

Four answers are possible, which are ‘strongly agree’, ‘somewhat agree’, ‘somewhat disagree’, and ‘strongly disagree.’ The first two categories are combined into one in the analysis as the group who “agrees”. The rest two categories are combined in a group, “disagree”.

4.6.5.3 Strategies to Decrease ETS

Five questions were asked about effectiveness of strategies used to reduce ETS.

(1) “What about smoking only in a certain room or part of the home?”

(2) “What about opening windows or doors?”

(3) “What about blowing smoke directly out a window or door?”

(4) “What about waiting for one hour before using a room that someone has been smoking in?”

(5) “What about using a fan?”

Three answers were possible: ‘reduces a lot’, ‘reduces a little’, and ‘makes no difference’ were used to answer the five questions. Because the literature shows that these strategies are actually not effective strategies,[145, 183, 184, 186] we will take those who believe that “it will reduce a lot” as the ones who really believe in the strategy.

4.6.6 Behaviors to Reduce ETS at Home

The variable “behavior” is defined by questions assessing what people tried to do to reduce or eliminate ETS exposure at home. If the respondents replied ‘yes’ to the question, “Is there anything that you personally do to reduce or eliminate second hand smoke in your home?”, a series of eight questions were asked to these current smokers and nonsmokers. The last question was only directed to nonsmokers.

(1) “What about smoking outside when someone else is in the home?”

(2) “What about not smoking, or going outdoors to smoke, when children are in the home?”

(3) “What about not smoking when children are in the same room?”

(4) “What about restricting your smoking to a room or certain part of the home?”

(5) “What about opening windows or doors?”

(6) “What about blowing smokes directly out a window or door?”

(7) “What about using fans?”

(8) “What about using air purifiers?”

(9) “What about removing ashtrays from sight?” (only asked to nonsmokers)

Four possible responds were used to answer the nine questions: ‘all of the time’, ‘most of the time’, ‘some of the time’ and ‘not at all’. For data analysis, the first

three are combined into one (all of the time', 'most of the time', and 'some of the time').

4.7 Analytical Approach

This study is a secondary analysis. Thus, analysis was post hoc. However, it was guided by the literature on ETS and one specific hypothesis on interaction was tested. All the analyses were weighted by the variable, nat_wgt1, which was provided for this survey because of over-sampling of smoking households. The data analyses were approached in the following order.

4.7.1 Descriptive Analysis

The data set was divided into the groups of interest: Francophone as defined in 4.6.1 and the rest of the Canadian population. The percentages of sample size in each region were presented. A demographic profile of the sample was obtained regarding Francophones as compared to the rest of the Canadian population.

4.7.2 Univariate Analysis

The prevalence of smoking and the prevalence of ETS exposure were calculated for the Francophones and the rest of the Canadian population. Then frequencies and cross-tabulations were calculated for each individual question of interest for Francophones and the rest of Canadians. The answers to each individual question were combined to be dichotomous in response when the cross-tabulation analyses were used. Current smokers and nonsmokers were separated to determine how their beliefs,

attitudes and behaviors about smoking and ETS exposure at home differed. The different attitudes, beliefs, and behaviors in Francophones as compared to the rest of the Canadians were presented in each table. The Odds ratio and the confidence interval were also presented in each table.

4.7.3 Multivariate Analysis

Multivariate models were built to examine beliefs, attitudes, and behaviors towards ETS along the dimension of cultural heritage (Francophones vs. the rest of the Canadian population) and smoking status (smoker vs. nonsmoker) while including other variables of interest as covariates. In addition, each category of responses was adjusted by gender, age, education and marital status. All variables, including the demographic variables were entered into the regression model all at once. The adjusted Odds ratio and the confidence interval were also presented in each table. Answers to similar questions such as those asking about effective strategies to reduce ETS exposures at home were combined, when appropriate, to provide a concise summary. Finally, the interaction term for cultural heritage and smoking status was tested, and adjusted by gender, age, education and marital status. The likelihood ratio test was used to identify the presence of an interaction. The software packages SAS 8.2 and SPSS 12 were used to conduct all the statistical analyses.

5. RESULTS

The results are presented in the following order. (1) The demographics of the survey respondents; (2) The smoking prevalence and EST exposure for Francophones and the Rest of the Canadian Population (RCP); (3) The beliefs on the health risks of ETS; (4) The attitudes towards ETS and the policies against ETS; (5) The beliefs about what strategies can reduce EST at home; (6) The behaviors as related to the attempts to reduce ETS at home.

The analysis was based on a sample of 5009 respondents who finished the long form questionnaires.

5.1 Demographics of the sample

The study sample includes about 30.1% Francophones (N=1507) and 69.9% of them classified as RCP (rest of the Canadian population (N=3502)). Most of the Francophones, 79.9%, came from Quebec (N=1219), with 11.4% from Ontario (N=143), 3.8% from the Atlantic (N=64), 3.4% from the Prairies (N=59), and 1.5% from the Pacific (N=22). Most of the RCP, 44.8% of them, came from Ontario (N=1595), followed by 23.6% from the Prairies (N=824), 18.3% from the Pacific (N=528), 8.5% from the Atlantic (N=395), and 4.7% from Quebec (N=160).

Table 5.1.1 presents the basic demographics of the survey respondents. Compared to the RCP, the Francophone respondents have more women, were less

educated, had lower income, and more likely to have come from Quebec. There were no differences between the two groups in terms of age and marital status.

Table 5.1.1 Demographics of the Survey Respondents

Variables		Francophones	Rest of the Canadian Population	
		N=1507 (%)	N=3502 (%)	P-value
Gender	Male	43.8	47.0	<0.05
	Female	56.2	53.0	
Age	18-29	23.0	22.3	NS
	30-54	53.7	52.9	
	55+	23.2	24.8	
Marital Status	Married/Partner	64.4	64.6	NS
	Widowed/divorced/ Separated	12.5	13.0	
	Never married	23.1	22.4	
Education	Less than High school	19.3	15.0	<0.0001
	High school	60.6	58.8	
	BA or higher	20.1	26.3	
Total Household Income	<$39,999	70.2	61.5	<0.0001
	40,000-69,999	24.3	26.7	
	70,000 and more	5.6	11.8	
Regions				<0.0001
	Pacific	1.5	18.3	
	Prairie	3.4	23.6	
	Ontario	11.4	44.8	
	Quebec	79.9	4.7	
	Atlantic	3.8	8.5	

5.2 Smoking Prevalence and ETS Exposure

Smoking prevalence was calculated based on smoking status as defined in 4.6.3. ETS exposure prevalence was calculated based on the actual ETS exposure to

nonsmokers at home in 4.6.4 (i.e. Respondents reported someone was smoking inside the house when there is a nonsmoker, either an adult or a child.)

Table 5.2.1 shows that smoking prevalence is 3.6 percentage points higher among the Francophones than among the RCP (26.0% vs. 22.4%), and the difference is statistically significant. Interestingly, the difference in ETS exposure is much greater than the difference in smoking prevalence. The Francophones have about 10.8 percentage points higher in exposure to ETS than RCP.

Table 5.2.1 Smoking Prevalence and Environmental Tobacco Smoke (ETS) Exposure

Variables	Francophones	Rest of Canadian Population	
	N (%)	N (%)	P-value
Smoking status:			
Never smokers	452 (40.9%)	1255 (51.5%)	<0.01
Ex-smokers	307 (33.2%)	645 (26.1%)	
Current smokers	748 (26.0%)	1602 (22.4%)	
ETS at home	1507 (19.3%)	3502 (8.5%)	<0.01

5.3 Beliefs about ETS and Attitudes toward ETS

The following tables present the results for the smokers and nonsmokers separately. Nonsmokers consist of never smokers and former smokers. Preliminary analysis found that never smokers and former smokers are not significantly different in their beliefs, attitudes, and behaviors. Thus, we combined the former smokers and never smokers into one group, nonsmokers.

For all the comparisons, we use the RCP as the reference group and then compare Francophones against it. The unadjusted odd ratios, which are based on univariate analysis, are represented first, followed by the adjusted odds ratio. The adjusted odds ratio includes adjustment by the gender, age, education and marital status. The 95% confidence intervals are presented in parentheses.

We first examine survey respondents' beliefs as to whether ETS is a risk to nonsmokers' health, and then their attitude towards ETS, followed by what they think will reduce ETS exposure, and finally what they have done to reduce ETS exposure at home.

5.3.1 Beliefs about the Health Risk of ETS for Specific Diseases

Table 5.3.1 shows the results when survey respondents were asked whether or not ETS was a cause of specific diseases. The response categories for these questions were "is a cause", "may be a cause" or "is not a cause." The percentages reported in the table combined those who believed ETS "is a cause" with those who believe ETS "may be a cause."

The results in this table show that most of the Canadian population believed ETS was a health risk for nonsmokers. This is especially true when it comes to ETS and lung cancer. A high proportion of them even believed that ETS might cause breast cancer among nonsmoking women. When asked about ETS effects on children, most of the respondents agreed that it could cause chest problems, and over 50% of the respondents considered ETS a cause of Sudden Infant Deaths syndrome (SIDS).

Nonsmokers were generally more likely to believe that ETS was harmful than the smokers. But even among the current smokers, a number had considered ETS to have significant health consequences to nonsmokers.

Overall, the Francophones were less likely to believe the harmful affects of ETS than did the rest of the Canadian population. All comparisons between the two groups

are statistically significant. This is mostly true even if we break down each cultural group into smokers and nonsmokers.

Tables 5.3.1 Health Risk of ETS

Variables		Francophones (N=1465) %	Rest of the Canadian Population (N=3353) %	OR (95% CI)	Adjusted OR (95% CI)
1. Lung cancer in nonsmokers	Non-smokers	91.2	95.0	0.55 (0.41 - 0.73)	0.53 (0.40 - 0.72)
	Current smokers	79.4	86.0	0.62 (0.45 - 0.87)	0.67 (0.47 - 0.96)
	Total	88.2	93.0	0.56 (0.45 - 0.70)	0.57 (0.46 - 0.72)
2. Heart attacks in nonsmokers	Non-smokers	69.2	82.8	0.47 (0.39 - 0.56)	0.50 (0.43 - 0.58)
	Current smokers	57.4	69.2	0.60 (0.46 - 0.79)	0.61 (0.46 - 0.81)
	Total	66.1	79.7	0.50 (0.43 - 0.57)	0.47 (0.39 - 0.56)
3. Breast cancer in nonsmokers	Non-smokers	50.5	69.0	0.46 (0.39 - 0.54)	0.47 (0.40 - 0.56)
	Current smokers	31.1	51.7	0.42 (0.32 - 0.56)	0.42 (0.32 - 0.57)
	Total	45.3	65.0	0.45 (0.39 - 0.51)	0.46 (0.40 - 0.53)
4. Chest problems in children	Non-smokers	94.1	96.6	0.55 (0.39 - 0.78)	0.52 (0.36 - 0.74)
	Current smokers	87.0	89.2	0.81 (0.54 - 1.20)	0.84 (0.55 - 1.27)
	Total	92.2	95.0	0.62 (0.48 - 0.81)	0.63 (0.48 - 0.83)
5. Problems in children's ears	Non-smokers	52.9	71.3	0.45 (0.38 - 0.54)	0.44 (0.37 - 0.52)
	Current smokers	39.3	53.7	0.56 (0.42 - 0.74)	0.56 (0.42 - 0.75)
	Total	49.4	67.2	0.48 (0.41 - 0.55)	0.46 (0.40 - 0.54)
6. Crib death or sudden infant death syndrome (SIDS)	Non-smokers	54.6	65.8	0.63 (0.53 - 0.74)	0.61 (0.51 - 0.72)
	Current smokers	38.6	45.4	0.76 (0.57 - 1.00)	0.79 (0.59 - 1.07)
	Total	50.2	61.1	0.64 (0.56 - 0.74)	0.64 (0.55 - 0.75)

5.3.2. Attitudes toward ETS and Policies against ETS

Table 5.3.2 presents the responses to questions that were used to assess the attitudes toward ETS and related policies or laws that could be implemented or enacted

against ETS. For these questions, the response categories are “strongly agree”, “somewhat agree”, “somewhat disagree” and “strongly disagree.” The table reports the proportion that combines “strongly agree” and “somewhat agree.” For most of the questions, a higher percentage indicates a more supportive attitude in controlling ETS. For some of the questions, such as those which ask if the ETS policies have gone too far or if people should make their decision without government interference, a lower percentage indicates they are more supportive of the ETS policies.

Data in this table show that both smokers and nonsmokers believed nonsmokers have the right to a smoke-free environment and they also believed that children are more likely to get sick when there is ETS. Therefore, most agreed that family doctors should advise parents about ETS risk for children. The percentages drop when the questions were about whether there should be laws against ETS. Many smokers and even nonsmokers thought that parents should have the right to decide whether or not to smoke around their children.

Overall, Francophones were less supportive of ETS policies than the rest of the Canadian population. As expected, smokers were less supportive of ETS policies than nonsmokers.

However, some interesting interactions between the smoking status and cultural groups were found. For example, the last question listed in this table asked survey respondents if “restrictions have gone too far, and if smokers need to start standing up for their rights”. Nonsmokers in each cultural group were much less likely than the smokers to agree with this statement. However, the difference was much larger

between nonsmokers and smokers of the RCP respondents compared to that of Francophone nonsmokers and smokers. This suggests a statistical interaction.

Table 5.3.2 Attitudes toward ETS and Toward Policies against ETS

Variables		Francophones	Rest of the Canadian Population		
		(N=1490) %	(N=3460) %	OR (95% CI)	Adjusted OR (95% CI)
1. Nonsmokers have the right to a smoke free environment	Non-smokers	96.1	95.5	1.17 (0.81 - 1.71)	1.27 (0.86 - 1.90)
	Current smokers	93.6	92.1	1.27 (0.76 - 2.11)	1.37 (0.81 - 2.33)
	Total	95.5	94.7	1.18 (0.87 - 1.59)	1.31 (0.95 - 1.80)
2. Children get sick more often when people smoke regularly around them	Non-smokers	78.9	89.5	0.44 (0.36 - 0.54)	0.42 (0.33 - 0.52)
	Current smokers	55.0	65.2	0.65 (0.50 - 0.86)	0.70 (0.53 - 0.94)
	Total	72.7	84.2	0.50 (0.43 - 0.59)	0.49 (0.42 - 0.59)
3. Family doctors should advise parents not to smoke around children	Non-smokers	93.6	97.4	0.39 (0.28 - 0.55)	0.39 (0.28 - 0.56)
	Current smokers	87.8	95.2	0.36 (0.23 - 0.58)	0.39 (0.24 - 0.63)
	Total	92.1	96.9	0.37 (0.28 - 0.49)	0.39 (0.30 - 0.52)
4. There should be a law that says parents can't smoke inside their homes if children are living there	Non-smokers	32.3	47.7	0.52 (0.45 - 0.61)	0.51 (0.43 - 0.60)
	Current smokers	16.2	32.9	0.39 (0.28 - 0.55)	0.41 (0.30 - 0.58)
	Total	28.1	44.3	0.49 (0.43 - 0.56)	0.48 (0.42 - 0.56)
5. There should be a law that says parents can't smoke inside their car if children are present	Non-smokers	54.7	63.8	0.69 (0.59 - 0.80)	0.69 (0.56 - 0.86)
	Current smokers	42.4	48.2	0.79 (0.61 - 1.02)	0.79 (0.61 - 1.03)
	Total	51.5	60.3	0.70 (0.62 - 0.80)	0.71 (0.62 - 0.81)
6. The court should order the parents not to smoke in their home when their child has asthma	Nonsmokers	66.3	78.4	0.54 (0.46 - 0.64)	0.51 (0.43 - 0.61)
	Current smokers	45.1	64.7	0.45 (0.34 - 0.58)	0.46 (0.35 - 0.61)
	Total	60.6	75.3	0.51 (0.45 - 0.59)	0.49 (0.42 - 0.56)
7. Smoking habits of parents should be taken into account when deciding child custody cases	Non-smokers	55.8	61.0	0.81 (0.69 - 0.94)	0.81 (0.70 - 0.95)
	Current smokers	34.5	28.4	1.33 (1.01 - 1.75)	1.34 (1.01 - 1.79)
	Total	50.2	53.7	0.87 (0.77 - 0.99)	0.91 (0.79 - 1.04)
8. Parents have the right to decide for themselves whether or not they smoke around their children	Non-smokers	65.8	53.5	1.67 (1.43 - 1.95)	1.66 (1.42 - 1.95)
	Current smokers	85.4	77.1	1.75 (1.24 - 2.47)	1.77 (1.25 - 2.53)
	Total	70.9	58.8	1.71 (1.49 - 1.96)	1.70 (1.47 - 1.96)
9. Restrictions have gone too far, and smokers need to start standing up for their right	Non-smokers	32.2	22.6	1.63 (1.39 - 1.92)	1.53 (1.29 - 1.80)
	Current smokers	67.8	67.4	1.02 (0.78 - 1.34)	0.98 (0.73 - 1.30)
	Total	41.3	32.6	1.45 (1.27 - 1.66)	1.37 (1.18 - 1.59)

5.3.3 Beliefs about What Strategies Can Significantly Reduce ETS at Home

The data presented in Table 5.3.3 are the proportions of survey respondents who believe certain strategies can reduce ETS at home "a lot" (as chosen from the response categories "reduces a lot", "reduces a little", or "makes no difference."). It should be noted that our literature review indicates these so-called strategies to reduce ETS are not effective in reality.[145, 183, 184, 186] Only smoking outside of the house will effectively reduce ETS. Thus, a higher percentage believing in these strategies means that people believe in the wrong strategies, making it less likely that the smokers will smoke outside of the house.

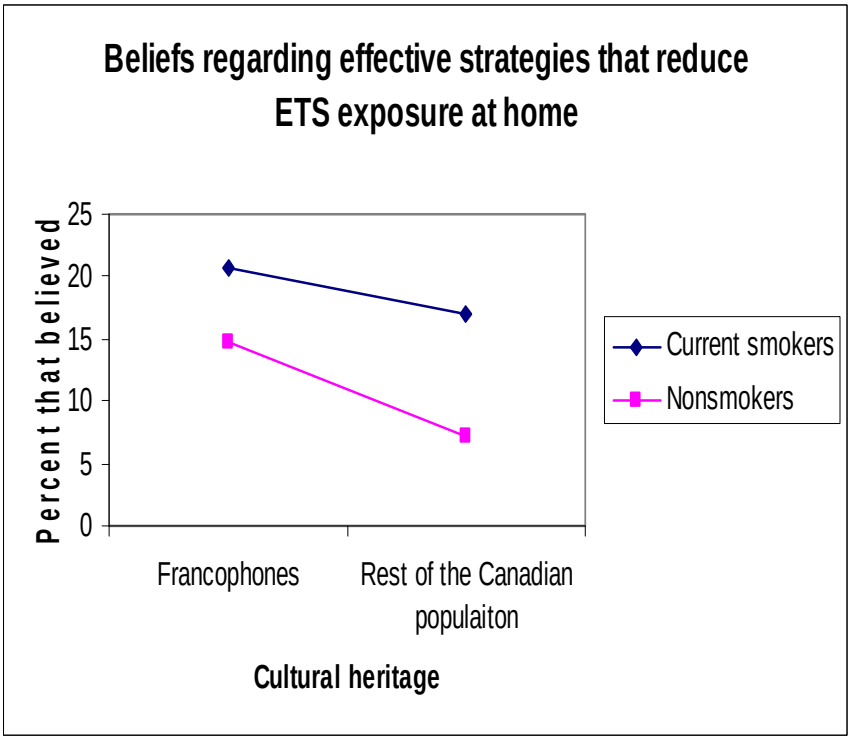
Table 5.3.3 Beliefs on What Strategies Can Significantly Reduce ETS at Home

Variables		Francophones	Rest of the Canadian Population		
		(N=1487) %	(N=3426) %	OR (95% CI)	Adjusted OR (95% CI)
1. Smoking only in certain room or part of the home	Non-smokers	14.9	9.4	1.70 (1.36 - 2.12)	1.67 (1.33 - 2.10)
	Current smokers	18.4	17.3	1.08 (0.77 - 1.51)	1.10 (0.78 - 1.55)
	Total	15.8	11.1	1.47 (1.23 - 1.77)	1.49 (1.24 - 1.80)
2. Opening windows or doors	Non-smokers	30.8	13.3	2.91 (2.44 - 3.47)	2.98 (2.49 - 2.58)
	Current smokers	44.7	31.6	1.76 (1.35 - 2.28)	1.71 (1.31 - 2.25)
	Total	34.4	17.4	2.49 (2.15 - 2.88)	2.56 (2.20 - 2.97)
3. Blowing smoke directly out a window or door	Non-smokers	34.1	19.3	2.16 (1.84 - 2.55)	2.16 (1.82 - 2.56)
	Current smokers	44.7	39.2	1.25 (0.97 - 1.62)	1.33 (1.02 - 1.74)
	Total	36.9	23.8	1.85 (1.61 - 2.13)	1.89 (1.64 - 2.19)
4. Waiting for one hour before using a room that someone has been smoking in	Non-smokers	13.6	8.9	1.61 (1.28 - 2.03)	1.63 (1.29 - 2.07)
	Current smokers	11.3	13.0	0.85 (0.57 - 1.28)	0.87 (0.57 - 1.32)
	Total	13.0	9.8	1.37 (1.12 - 1.67)	1.42 (1.16 - 1.74)
5. Using a fan	Non-smokers	12.6	7.1	1.90 (1.49 - 2.42)	1.89 (1.47 - 2.42)
	Current smokers	18.7	17.4	1.09 (0.78 - 1.52)	1.09 (0.77 - 1.53)
	Total	14.2	9.4	1.56 (1.28 - 1.90)	1.56 (1.28 - 1.92)

The data in Table 5.3.3 show a consistent pattern. First, nonsmokers are much less likely than smokers to believe that these strategies will significantly reduce ETS at home. Second, the difference between nonsmokers and smokers is much larger among the RCP than among Francophones. There is a significant interaction between smoking status and the cultural group in response to each of the five questions.

Figure 1 summarizes the interaction in the following manner. If a respondent said "yes, it reduced a lot" for three out of the five questions, then he or she is considered a person who believed that ETS can be reduced significantly by these strategies. Figure 1 shows that nonsmokers are much less likely to believe that these strategies will really reduce ETS a lot. Moreover, there is significant interaction such that the difference between the nonsmokers and smokers was much greater among the RCP than among Francophones ($p<0.01$, adjusted by demographics).

Figure 1



5.4 Behaviors to Reduce ETS at Home

Finally, survey participants who had at least one smoker in their household were asked if something had been done or if they personally had done something to reduce ETS. About the same percentages of Francophone respondents and the RCP respondents reported "yes" to this question (55.6% and 56.6%, respectively, p =0.77). Moreover, this is true for both smokers and nonsmokers in both cultural groups. Smokers reported higher percentages than nonsmokers in both cultural groups. For smokers, the percentages reporting to have done something to reduce ETS is 58.3% and 57.4% (p=0.81) for Francophones and the RCP, respectively. For nonsmokers, the percentages are 46.7% and 48.3% (p=0.86) for Francophones and the RCP.

Those who responded "yes" to the previous question were then asked a series of questions regarding what had been done or what they personally had done to reduce ETS. The results are shown in Table 5.4.1. The response categories for these questions are "all of the time", "most of the time", "some of the time", and "not at all." The percentages reported in the table combine the first three responses into one category. Please note that the sample size for each question shown in Table 5.4.1 is different because if the smoking respondents answered "all the time" to question 1, "What about smoking outside when someone else is in the home?", then they would not be asked question 2. If they answered "all the time" to question 2, then they would not be asked question 3, and so on.

Table 5.4.1 shows an interesting pattern. There is a significant difference between Francophone and the RCP in having acted on the behaviors that can be effective in reducing ETS that is to smoke outside. The RCP group is significantly

more likely than Francophones to report that smokers were smoking outside when someone else or children were in the house (questions 1 and 2). However, for those ineffective strategies, such as smoking in a different room or using a fan, there is no difference between the two cultural groups.

There is, however, one very large difference between RCP and Francophones in terms of whether the nonsmokers would try to remove ashtrays from sight (73.8% vs. 22.6%, $p<0.001$. It should be noted that only those nonsmokers who have smokers in their household were asked of this question.)

Table 5.4.1 Behaviors to Reduce ETS in the Home

Variables		Francophones	Rest of the Canadian Population		
		(%)	(%)	OR (95% CI)	Adjusted OR (95% CI)
1. Smoking outside when someone else is in the home	Nonsmokers	N=43 25.5%	N=28 60.5%	0.22 (0.06 - 0.79)	0.18 (0.04 - 0.87)
	Current smokers	N=369 50.9%	N=552 72.7%	0.39 (0.26 - 0.58)	0.40 (0.27 - 0.62)
2. Not smoking, or going outdoors to smoke, when children are in the home	Nonsmokers	N=41 35.2%	N=24 81.5%	0.12 (0.03 - 0.57)	0.09 (0.01 - 0.60)
	Current smokers	N=342 66.8%	N=478 81.4%	0.46 (0.29 - 0.74)	0.48 (0.29 - 0.79)
3. Not smoking when children are in the same room	Nonsmokers	N=41 69.2%	N=24 74.8%	0.76 (0.19 - 3.04)	1.03 (0.20 - 5.40)
	Current smokers	N=280 71.7%	N=369 80.7%	0.60 (0.35 - 1.05)	0.65 (0.37 - 1.15)
4. Restricting your smoking to a room or certain part of the home	Nonsmokers	N=41 62.0%	N=24 85.1%	0.29 (0.06 - 1.26)	0.21 (0.04 - 1.29)
	Current smokers	N=218 69.1%	N=296 70.2%	0.95 (0.53 - 1.69)	1.04 (0.57 - 1.90)
5. Opening windows or doors	Nonsmokers	N=41 86.4%	N=24 84.1%	1.21 (0.23 - 6.44)	0.61 (0.06 - 6.70)
	Current smokers	N=137 95.7%	N=223 97.9%	0.47 (0.07 - 3.00)	0.41 (0.06 - 2.83)
6. Blowing smoke directly out a window or door	Nonsmokers	N=41 47.8%	N=24 49.9%	0.92 (0.27 - 3.13)	0.46 (0.10 - 2.22)
	Current smokers	N=91 47.9%	N=95 52.0%	0.85 (0.36 - 1.99)	0.75 (0.30 - 1.88)
7. Using fans	Nonsmokers	N=41 72.4%	N=24 62.6%	1.57 (0.43 - 5.74)	3.29 (0.69-15.62)
	Current smokers	N=90 64.8%	N=94 60.6%	0.95 (0.43 - 2.14)	0.97 (0.41- 2.33)
8. Using air purifiers	Nonsmokers	N=41 57.6%	N=24 40.1%	2.03 (0.58 - 7.13)	3.10 (0.66-14.45)
	Current smokers	N=57 25.8%	N=71 44.6%	0.55 (0.17 - 1.83)	0.49 (0.14 - 1.78)
9. Removing ashtrays from sight	Nonsmokers	N=41 22.6%	N=24 73.8%	0.10 (0.03 - 0.42)	0.08 (0.02 - 0.45)

6. DISCUSSION

This study compared the ETS exposure of Francophones with the rest of the Canadian population and found that Francophone nonsmokers were significantly more likely to be exposed to ETS than the nonsmokers in the rest of the Canadian population. This was true after adjusting for demographic differences (gender, age, education, and marital status) between the two groups. Overall, Francophones were more than twice more likely to be exposed to ETS than the rest of the Canadian population (19.3% vs. 8.5%). This is a much greater difference than would be expected given that the smoking prevalence is only a few percent higher among the Francophones (26.2% vs. 22.4%).

In order to explain the large difference in ETS exposure, this study examined the beliefs, attitudes, and behaviors related to ETS for both groups. It was found that Francophones were different from the rest of the Canadian population in almost every aspect we examined. They were less likely to believe that ETS is harmful. They were less supportive of proposals to have more laws against ETS exposure. They were also less likely to have done something that effectively reduces ETS exposure at home. All these differences were statistically significant even if the comparisons between Francophones and the rest of the Canadian population were done separately for the smokers and the nonsmokers. Comparing the difference for smokers and nonsmokers separately ensures that the overall difference between Francophones and the rest of the Canadian population were not caused by the greater percentage of smokers among

Francophones, as smokers are expected to be less inclined to believe the harm of ETS and less supportive of laws against ETS.[143, 164, 166, 191-193] We found that smokers indeed were less likely to believe the harm of ETS and less supportive of any measure aiming to reduce ETS, but the difference between Francophones and the rest of Canadian population remained significant when we only compared smokers with smokers and nonsmokers with nonsmokers from each group.

The most interesting difference between the Francophones and the rest of the Canadian population, however, was their beliefs on those so-called ETS reduction strategies that appeared to be effective but are not in reality (e.g., opening the window when someone smokes).[145, 183, 184, 186] Francophone smokers and nonsmokers were more likely to believe that these strategies were effective than their counterparts in the rest of the Canadian population. Moreover, there is a statistically significant interaction between smoking status and cultural heritage. In others words, fewer nonsmokers than smokers within each cultural group believed that these strategies were really effective, but the beliefs difference between nonsmokers and smokers was much greater among the rest of the Canadian population than that among Francophones. This interaction supports the hypothesis outlined earlier in the thesis. As we will discuss in more detail later, this interaction provides a good explanation why the difference in ETS exposure is much greater than the difference in smoking prevalence between the two cultural groups. It has strong implications for future tobacco control activities that aim to reduce ETS exposure.

6.1 Differences in Beliefs about Health Risks of ETS

When asked about the health risk of ETS for eight specific diseases, "If nonsmokers will be more likely to get sick if they are exposed to ETS", most survey respondents said "yes." On average, nonsmokers were more likely to say "yes" than smokers. However, both smokers and nonsmokers in the rest of the Canadian population were more likely to say "yes" than their counterparts in the Francophone population. Table 5.3.1 shows that this pattern of difference holds true for all the specific diseases although some diseases get higher percentages of them responding with "yes" (e.g. lung cancer) while others have lower percentages (e.g., SIDS).

It is not totally clear, however, how much of their answers on health risks of ETS were based on actual health knowledge about how each disease is affected by ETS and how much was based on their imagination and attitudes towards ETS. For example, most nonsmokers and smokers believed that ETS was a cause of lung cancer. However, many of them also believed that ETS was a cause of breast cancer. The scientific literature on ETS and lung cancer is very strong, but the literature on ETS and breast cancer is weak. There are some recent studies that report a link between ETS and breast cancer.[62, 63] However, an authoritative document from the International Agency for Research on Cancer (IARC) has concluded that ETS is not a cause of breast cancer.[58, 64, 65] In any case, it was certainly not a well known fact at the time of the survey that ETS caused breast cancer because most of the studies on ETS and breast cancer were published after this survey. It is not clear why so many of the survey respondents believed that ETS caused breast cancer. It is possible that the prominence of breast cancer for women and the strong campaign to prevent it creates a general impression

among average citizens that many things cause breast cancer. The breast cancer survivor movement and stories on the news influence the general societal views about cancer and risk factors. However, it is incorrect, strictly speaking, to believe the link between ETS and breast cancer. Despite the lack of scientific evidence, about two thirds of respondents among the rest of the Canadian population believed that ETS caused breast cancer. Even 45% of the Francophone population believed that. The difference between the two groups is statistically significant.

The fact that data on beliefs of health risks of ETS shows consistent patterns of difference between Francophones and the rest of the Canadian population, whether it is a correct belief or not, suggests that much of the belief is a reflection of attitudes towards ETS as a negative thing rather than an accurate understanding of what ETS does to nonsmokers. This is important for future tobacco control campaigns because it suggests that it might be more important to change attitudes by presenting emotional and memorable stories than trying to present statistics on the health risks of ETS.[198]

The same may be true for the difference between smokers and nonsmokers. A greater proportion of nonsmokers than smokers believed in the negative health consequences of ETS, whether the belief is correct or not. It is certainly possible that nonsmokers may be more knowledgeable than smokers about the health risk of smoking, especially for those who are former smokers, who might have experienced negative health effect of smoking that caused them to quit. Previous studies have also reported that nonsmokers are more likely to believe that ETS is a health risk than smokers.[32, 37, 41, 97, 191, 199-202] This study differs from the previous studies in that it examines the response to the questions that ask for the link between ETS and diseases

that do not really exist and found that nonsmokers were still more inclined to believe ETS caused that disease even if there was no scientific evidence for it.

This probably explains why the nonsmokers in the rest of the Canadian population were significantly more likely to believe ETS was a health risk than the Francophone nonsmokers. Again it is possible that the two groups of nonsmokers might actually have different levels of knowledge about ETS. But it is possible that their different attitudes towards ETS lead them to respond differently when asked about the risk of ETS. The attitude in turn is influenced by the culture. For example, Francophones may be equally exposed to media campaigns on the risk of smoking and ETS as the rest of the Canadian population, but the former change attitude slower because their culture tends to be lower-trust in that they are less inclined to believe information coming from external sources.[203] The survey did not measure media exposure level, but we tried to control knowledge by adjusting for educational levels of the respondents in the analysis. When the analysis was adjusted for their educational level, the difference was still statistically significant. The same may be true for the significant difference between the smokers among the rest of the Canadian population and those among the Francophones: the former were more likely to believe ETS was a risk than the latter, whether the belief is supported by scientific studies or not. The data from this study cannot tell us for certain if the difference in beliefs is based more on knowledge or on attitude. But it suggests that respondents' answers to questions on ETS health risk are often mixed reactions that are based both on beliefs and attitudes. That is probably why the data in this study shows such a consistent pattern in beliefs

and attitudes between smokers and nonsmokers and between Francophones and the rest of the Canadian population.

6.2 Attitudes Towards ETS and ETS Policies

The overwhelming majority (about 95%) of the survey respondents believed nonsmokers have rights to a smoke-free environment. This is the one question for which there were no significant differences in response between Francophones and the rest of the Canadian population. However, differences emerged when it came to questions on how to achieve a smoke-free environment for nonsmokers. Most respondents agreed that physicians can help by telling parents not to smoke around children, although there was a significant difference in answers to this question between Francophones and the rest of the Canadian population. The biggest difference between the two cultural heritage groups was when they were asked about the legal approach to reduce ETS. Francophones were much less likely to agree that there should be laws to help protect nonsmokers, even if the nonsmokers were children who could not protect themselves. Francophones were also more likely to agree that parents should have the right to decide if they want to smoke around their children.

There are two possible explanations for the difference between Francophones and the rest of the Canadian population in their attitudes towards policies to protect nonsmokers. One is that there might be a general difference between the two groups in their attitudes towards government involvement in what might be considered a personal habit of cigarette smoking. For Francophones, such general attitudes may have two sources. One is their cultural background. Some studies have reported that

Francophones tend to emphasize individualism and personal pleasure-seeking, such as eating well and physical beauty.[204] This general culture may influence Francophones' attitude towards smoking such that Francophone smokers enjoy smoking and are not worried too much about risk to themselves or ETS risk to nonsmokers. The same cultural tendency will also predict that Francophone nonsmokers are more tolerant of ETS exposure because they understand that a law restricting smoking at home cannot really be enforced and thus is useless.[159] Another source of this general attitude against governmental involvement may be related to the fact that Francophones are a minority in this country.[160] They might have felt that they have been subjected to more unreasonable laws passed by the majority within this country and thus believe strongly in the sanctity of the home and are not willing to let government decide what they do at their own home. In other words, the general attitude against government involvement is reflected in the specific attitudes towards laws against ETS exposure at home.

The problem with this explanation, however, is that the survey questions were not asking about government involvement, they were about protection of children. There are no known clear cut political differences between Francophones and the rest of the Canadian population in such complex issues that involve both government involvement in personal life and the protection of children at the same time.[205] Protection of children is a theme that resonates with all cultures and cuts across groups that hold different political views. Thus, even though the general political views might have influenced the respondents' answers to these questions, we need to look for more explanation for the very large difference in attitudes found between the two groups.

Another likely explanation is that there are smoking-specific cultural differences between the two groups. Previous studies have shown that Francophones are generally more receptive to having people smoking inside their homes.[37, 166] This may be related to how their communities are organized. For example, Francophones have more opportunities for relatives and friends to get together, and they are often hesitant to ask people not to smoke inside their house.[206] Such cultural differences may explain that Francophones prefer to have families decide their own ETS reduction policies.

The best evidence to support the smoking-specific explanation is that nonsmokers and smokers in this study have dramatically different attitudes towards laws and policies against ETS. Among the Francophones, the nonsmokers were significantly more likely to agree that there should be laws against ETS than smokers. Previous studies have reported similar results on the difference between smokers and nonsmokers. [143, 164, 166, 191-193] For example, Francophone physicians who are nonsmokers were significantly more likely to advise their patients to quit smoking than those who are smokers themselves.[201, 207] Francophone nonsmoking parents are much more supportive of ETS policies to protect children than smoking parents.[166] In fact, Table 5.3.2 shows that even though Francophones are generally less supportive of ETS policies than the rest of the Canadian population; the nonsmokers among the Francophones are consistently more supportive of ETS policies than the smokers among the rest of the Canadian population. In fact, smoking status is so critical that when the respondents were asked, “Restrictions have gone too far, and smokers need to start standing up for their rights”, there was no difference between Francophones and the rest of the Canadian population if the respondents were smokers. The only difference

between the two groups was among the nonsmokers. This suggests that it is not so much the general difference in political views that separates Francophones and the rest of the Canadian population in their attitudes toward legal approaches to reduce ETS. Rather it is how nonsmokers in each group view ETS policies that may hold the key to achieving a smoke-free environment. This becomes even clearer when it comes to the nonsmokers' beliefs on strategies to reduce ETS, discussed in the next section.

6.3 Beliefs on Potential Strategies to Reduce ETS

As the literature review indicates, there are many strategies that people may use to reduce ETS that are actually not effective. Such strategies include smoking in only one room or using a fan when smoking.[145, 183, 184, 186] This survey had five questions that assessed respondents' beliefs on these strategies. The reason for asking these questions is the implicit assumption that if people believe these strategies are effective, then it may prevent them from doing what is really effective: that is to allow smoking only outside of the house.

It should be recognized that it is not clear how the survey respondents will know for certain if these strategies are effective or not. There are scientific studies related to these strategies, but it is not clear that respondents will learn about the results of these scientific studies. It is possible that they could have read about these studies in the newspaper. But it is also possible they answered these questions in the same manner as they answered those questions on the health risks of ETS. It is probably partly based on their knowledge and partly based on their beliefs and attitudes towards ETS.

Figure 1 summarizes the results for the responses to the five questions on these ETS reduction strategies. There are two group differences and one significant interaction. Francophones are more likely to believe that these strategies will reduce ETS exposure than the rest of the Canadian population, and the smokers in each group were more likely than nonsmokers to hold that beliefs. These group differences are not surprising given what we have already discussed about the difference between Francophones and the rest of the Canadian population and the difference between smokers and nonsmokers.

What is significant is the interaction between the smoking status and cultural heritage. Although the nonsmokers are less likely to believe that these strategies are effective than smokers, the difference between the two groups among the rest of the Canadian population is much greater than the difference between the groups among the Francophones. If we believe that nonsmokers are the group that will push for laws and policies to reduce ETS,[196] then the bigger the difference between the nonsmokers and smokers in their beliefs and attitudes the more likely that something will be done to reduce ETS.[39, 42] To put it hypothetically, if nonsmokers absolutely do not believe that these strategies will effectively reduce ETS, then they would push hard for changes that will force smokers to smoke outside of the house. Studies have shown that the nonsmokers' belief and attitude towards ETS predict both the likelihood of restriction of smoking at home and the existence of public policies against ETS at work place.[42] On the other hand, if nonsmokers are not sure whether or not these strategies reduce ETS, then nonsmokers are more likely to allow smokers to smoke inside the house. Thus, this significant interaction between smoking status and cultural groups explains why the

difference in ETS exposure in the two cultural heritage groups is much larger than the difference in smoking prevalence. In other words, it is not just a matter of how many people in each group smoke; it is also how different the nonsmokers are from the smokers that will drive each cultural group to implement effective ETS measures.[32]

This result has significant implications for future tobacco control campaigns. What it suggests is that in order to move the ETS policies forward, it is more important to mobilize nonsmokers to want to have more stringent ETS reduction measures than to educate smokers about the risk of ETS. Smokers already know ETS is harmful to nonsmokers as we have found in this survey. But it is not the smokers' knowledge about ETS, but the nonsmokers' beliefs about what strategies are effective that will drive the ETS policies. This is what has been done so successfully in places like California, which has witnessed the dramatic drop of ETS over the last 10 years.[39, 42] It is the large gap in attitudes between the nonsmokers and the smokers, created in part by the comprehensive tobacco control program in California, that eventually brought most smokers to accept policies banning all indoor smoking.[42] Moreover, the effective ETS reduction measures, such as home smoking restrictions, have led to greater numbers of smokers quitting,[170, 171] which will further help reduce ETS. Of course, Canada is not the same as California and there is regional and provincial variance in their readiness to make dramatic changes in ETS policies. Quebec, for example, makes a slower progress in tobacco control than British Columbia,[166] and cultural background of Francophones certainly contributes to the difference. However, all progress takes time. In the US, for example, many states gradually followed California in making similar changes in ETS policies and the nonsmokers are crucial to the changes.[42] The overall results from this

study suggest that mobilizing nonsmokers using the risk of ETS may be a good tobacco control strategy in general.

6.4 Behaviors to Reduce ETS at Home

The data on behaviors to reduce ETS at home from this study support the assumption that to believe these non-effective strategies will reduce the probability that people will take actions that can actually reduce ETS. This study found that about the same percentage of respondents in Francophones and the rest of the Canadian population have taken action to reduce ETS at home. This agrees with the results that both groups have similar percentages that believe that ETS is harmful to nonsmokers. However, the key difference is what they do to reduce ETS. Table 5.4.1 shows that Francophones are significantly less likely to report effective ETS reduction strategies: Those smokers were smoking outside when someone else or children were in the house. However, for those ineffective strategies, such as smoking in a different room or using a fan, there was no difference between the two groups.

It is interesting to note here that there was one very large difference between Francophones and the rest of the Canadian population in terms of whether the nonsmokers would try to remove ashtrays from sight. Even though this behavior is not directly related to reducing ETS, the fact that nonsmokers from the rest of the Canadian population group were so much more active than nonsmokers from the Francophone group in attempting to reduce smoking is consistent with all the data that have been reported in this study.

The results that the Francophone and the rest of the Canadian population differ in their likelihood of adopting effective ETS-reduction strategies but do not differ in adoption of ineffective strategies suggest that a mass media campaign that focuses specifically on what is effective and what is not effective ETS reduction strategies may help increase the percentage of smokers smoking outdoors.[40, 175, 196] The reason is that the data suggest that both nonsmokers and smokers are willing to do something to reduce ETS and many of them think that they are doing something already. If the campaign can show what is and what is not effective, it may encourage those who are doing something already to change ineffective strategies to effective strategies.[175]

6.5 Strengths and Limitation of the Study

This study is the first study, to my knowledge, that compares Francophones with the rest of the Canadian population on their beliefs, attitudes, and behaviors toward ETS that is based on a national survey. The definition of Francophones matches the definition of the French Language Services Act and Statistics Canada.[160] It is a more comprehensive definition than the one used in the Dewit study which only used ethnic groups to identify the French group because the survey did not ask the question about the language spoken most often in the home.[35] The population survey has the advantage of representing the whole population, which is better than recruiting a study sample by advertisement. The survey has many questions, which allow the analysis to compare beliefs, attitudes and behaviors to see if the results agree with each other. Although the study is a secondary analysis, we had a hypothesis that was formulated based on the literature review. The hypothesis was supported by the data. Moreover, the results

have practical implications for future tobacco educational campaigns to reduce ETS. It provides useful information on what kind of messages to disseminate (e.g., what is actually effective ETS-reduction strategies) and which group to target (e.g. nonsmokers)

This study has several limitations. The survey was a cross-sectional survey, which makes it very difficult to assess any causal relationship. Although the data support the hypothesis that the Francophone group has a higher ETS exposure and shows a smaller difference between smokers and nonsmokers in beliefs and attitudes, we cannot be certain which is the cause and which is the effect. Also, many selected to be interviewed did not respond to the survey. The survey was done by telephone, which means there might be bias in terms of who did not respond to the survey because social economic status is correlated with the availability of telephones, although most Canadians have telephones. While weighting procedures help to minimize such problems, the lack of contact with significant numbers of those who were eligible to be interviewed limits the ability to generalize the results. The intervention to reduce ETS will not only help protect nonsmokers, many of their children, from the harm of ETS, but will eventually help smokers to quit smoking. Overall, however, the results agree with what has been reported in the literature on ETS and on ETS control, which increases our confidence in the study results.

6.6. Culture, Beliefs, Targeted Interventions to Reduce ETS

This study provides information that is specific to the Canadian population, especially for the Francophone subgroups. It shows that cultural background is a significant factor in both beliefs and attitudes towards ETS. The culture affects how

much a group responds to an external campaign on any health information in general and it affects how Francophones respond to information on ETS risk on nonsmokers in particular. As mentioned earlier, the beliefs and attitudes are not completely determined by knowledge alone. The complexity of beliefs and attitudes related to ETS policies suggest that we need to look beyond the simple statistics and consider the role that culture may play in any interventions designed to change ETS exposure among Francophones.

The specific information obtained in this study regarding the beliefs, attitudes of the Francophone population provides some basis for more tailored intervention in future interventions with this group. It clearly suggests that we should not lump the Francophone population with the rest of the Canadian population. We need to avoid simply using the translated materials from English-speaking population for Francophone population.[36, 159] The study shows that Francophones are less ready to make dramatic changes in certain area of ETS policies than the rest of the Canadian population, so the campaign among this group needs to be more tailored to their readiness. For example, Francophones seems to have some reaction towards heavy governmental involvement in setting up home restriction, indicating that approach that may use positive encouragement with humor might be more effective.[159] At the same time, the results show that nonsmokers among the Francophones are more ready than the smokers, suggesting that a campaign geared toward nonsmokers of this cultural group can help move the whole group to implement more effective ETS-reduction strategies. If we take into account both the cultural and linguistic backgrounds of the

Francophones while using the common lessons learned from all effective tobacco control campaigns, then we will most likely reach the best results.[36, 159]

6.7 Future research.

Future research in this area should include longitudinal studies. The present study cannot reach any conclusion as to whether the relationship we found is causal because we used data from a cross-sectional survey. The working hypothesis of this study was that nonsmokers' beliefs and attitudes towards ETS exposure would affect smokers' beliefs and eventually would lead smokers to smoke outside. It received some support in this study. However, this hypothesis should be tested in a better design by targeting the nonsmokers, change their beliefs and attitudes first through an intervention and then assess how much the beliefs and attitudes of the smokers who live in the same household are changed accordingly. Furthermore, this study suggests that smokers' quit rate will be higher if they start to smoke outside as a result of encouragement from the nonsmokers living in the same household. This relationship should be tested in a prospective study. In addition, future research might include more detailed questions on culture. This survey included limited data on culture itself. It did not, for example, assess the relationship beyond people living in the same household. There was no question assessing the influence of other relationship such as relatives. Moreover, detailed assessment on what kind of television programs they watch or what kind of newspaper they read might provide further information on their cultural ties and allegiance. This kind of information would also provide concrete help for the future design of intervention studies in order to reach the appropriate target population.

6.8 Conclusion

This study showed that the cultural heritage of Canadians was a significant predictor of their beliefs, attitudes, and behaviors toward ETS and ETS policies. Francophones and the rest of the Canadian population differ systematically in their ETS related beliefs, attitudes and behaviors. These differences seem to be robust after adjusting for other demographic differences between the two groups. More importantly, the study found that in addition to the difference in smoking prevalence of these two groups, the biggest difference was the beliefs and attitudes of the two nonsmoking groups. The results suggested that in order to move ETS policies forward and to effectively reduce ETS exposure among Canadian nonsmokers, the key strategy is to mobilize the nonsmokers to be less tolerant of ETS and more persistent in only allowing smoking to occur outdoors. The intervention to reduce ETS will not only help protect nonsmokers, many of the children, from the harm of ETS, but will eventually help smokers to quit smoking.

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Behavioral Ethics Application
University of Saskatchewan

1. **Name of researcher(s) and/or supervisor (s) and related department(s):**
Dr. Anne Leis, Dept. of Community Health & Epidemiology

1a. **Name of student(s), if a student study, and type of study (e.g., B.A., Hon., M.A., Ph.D.):** Tong Zhu, MSc (Candidate)

1b. **Anticipated start date of the research study (phase) and the expected completion date of the study (phase):**
Start date: January 1, 2005
Expected completion date: December 31, 2005

2. **Title of Study:** Beliefs and Behaviors Related to Environmental Tobacco Smoke (ETS) Exposure in the Home: Regional and Cultural Differences

3. **Abstract (100-250 words):**
It is well recognized that ETS is a risk factor for cancer and other diseases and is a cause for potential years of life lost. In 2001, regular smoking occurred in 21% of homes in Canada with children under the age of 12. This represents over 800,000 children who were regularly exposed to the hazards of second hand tobacco smoke in their home. The purpose of the proposed study is to better understand attitudes, behaviors and cultural influences associated with ETS exposure in Canadian home environments, and more specifically to determine how parents and other household members in homes with children perceive, understand and make decisions about ETS in their homes.

The objective of this study is to show that the belief, behaviors, and the actual exposure to ETS differ by region and cultural heritage, and to demonstrate that exposure to ETS is determined by multiple factors. A simple but reliable measure of culture difference is the preferred language spoken at home (e.g., English vs. French).

4. **Funding:** Tong Zhu is supported by a partial Graduate Teaching Fellowship from the College of Medicine (January to August 2005) and scholarship support paid by the Dr. Louis Schulman Trust Fund (September to December 2005).

5. **Participants:** This study is a **secondary data analysis of data** which has been previously collected. No new participants will be recruited. No recruitment tools are required for this study.

6. **Consent:** Participant consent was ensured prior to collection of data by the Ontario Tobacco Research Unit. No new participants will be recruited. Ethnic approval was obtained in October 11, 2001 for the data collection. See attached.

7. **Methods/Procedures:** This project will be a secondary analysis of data previously collected in a cross-sectional survey designed by the 2001 National Survey on Environmental Tobacco Smoke (ETS) in the Home that was conducted by the Ontario Tobacco Research Unit. Field work was carried out by the Institute for Social Research, York University between June 12, 2001 and January 16, 2002.

8. **Storage of Data:** Study data will be stored in a locked cabinet in the Dept. of Community Health & Epidemiology for 5 years under the responsibility of Dr. Anne Leis.

9. **Dissemination of Results:** This work is for partial completion of a Master's degree in Community Health & Epidemiology. Tong will be encouraged to present results at local and national conferences and will assist in the preparation of publications.

10. **Risk or Deception:** There is no known risk or deception in this study.

11. **Confidentiality:** No identifying information has been released by the Ontario Tobacco Research Unit.

12. **Data/Transcript Release:** N/A

13. **Debriefing and feedback:** N/A

14. **Required Signatures & Contact Information:**

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PROTOCOL REFERENCE #201/2001
(Previously Protocol #114/2000 & #23/99 & #004A/98 & #029A/97)

October 11, 2001

Roberta Ferrence, PhD
Director,
Ontario Tobacco Research Unit
c/o Centre for Addiction and Mental Health
33 Russell Street, T5
Toronto, ON M5S 2S1
FAX: 416-595-6068

Dear Dr. Ferrence:

Re: Research protocol #201/2001 entitled, "A national study on Environmental Tobacco Smoke in the Home" by Roberta Ferrence

We are writing to advise you that the Centre for Addiction and Mental Health Research Ethics Board has granted approval to the amendment for the above-named research study, as per Ms. Marilyn Pope's request dated October 2, 2001.

The amendment will add a question to the end of the current survey instrument, asking respondents if they would be willing to be re-contacted.

During the course of the research, any significant deviations from the approved protocol **(that is, any deviation which would lead to an increase in risk or a decrease in benefit to human subjects)** and/or any unanticipated developments within the research should be brought to the attention of the Research Ethics Office.

Best wishes for the successful completion of your project.

Yours sincerely,

for
Susan Pilon
Executive Officer, Research Ethics Board
CAMH - ARF site,
33 Russell St., Toronto, ON M5S 2S1

SP/nd

cc: P. Kaufman (fax: 416-595-6068) P. Darby J. Simpson
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Addiction Research Foundation
Fondation de la recherche sur la toxicomanie

Clarke Institute of Psychiatry
Institut psychiatrique Clarke

Donwood Institute
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UNIVERSITY OF SASKATCHEWAN
BEHAVIOURAL RESEARCH ETHICS BOARD
http://www.usask.ca/research/ethics.shtml

NAME: Anne Leis (Tong Zhu) **Beh #** 05-66

DATE: April 5th, 2005

The Behavioural Research Ethics Board has reviewed the revisions to the Application for Ethics Approval for your study "Beliefs and Behaviours Related to Environmental Tobacco Smoke (ETS) Exposure in the Home: Regional and Cultural Differences" (Beh #05-66).

1. Your study has been APPROVED.
2. Any significant changes to your proposed study should be reported to the Chair for Committee consideration in advance of its implementation.
3. The term of this approval is for 5 years.
4. This approval is valid for five years on the condition that a status report form is submitted annually to the Chair of the Research Ethics Board. This certificate will automatically be invalidated if a status report form is not received within one month of the anniversary date. Please refer to our website for further instructions: http://www.usask.ca/research/ethics.shtml

I wish you a successful and informative study.

Dr. Valerie Thompson, Chair
Behavioural Research Ethics Board

VT/cc

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Appendix II: Excerpts from the original questionnaires “Environmental Tobacco Smoke in the Home: A National Survey” which were used for this study.

==========
ETS 2001 Questionnaire, June 12 2001 Short Form (Dec 12, 2001)
==========

>gend<
INTERVIEWER: Enter respondent's gender please

1 Male
5 Female
8 don't know

RESPONDENT'S SMOKING STATUS & BEHAVIOUR INSIDE THE HH

>ss1<
Have you smoked at least 100 cigarettes in your life?

1 yes
5 no
9 refused [*out of survey*]

>ss2<
What about pipes, cigars or cigarillos, have you smoked at least 50 of these in your life?

1 yes
5 no
8 don’t know 9 refused

>ss3< [*if not smoked100 cigarettes at ss1 skip ss8*]
At the present time do you smoke CIGARETTES:

1 daily
3 occasionally
5 not at all
9 refused [*out of survey*]

>ss3_occ<[*only if occasionally at* ss3]
In a typical week, on how many days do you have one or more cigarettes?

0 smokes less than once a week
1-7 Enter number of days
97 varies
98 don't know 99 refused

>ss4a< [*only if not at all in ss3, but skip if 7 days at ss3_occ]*
Have you ever smoked cigarettes daily?

1 yes
5 no
8 don't know 9 refused

>ss4b< [*only if (ever a) daily smoker, yes at ss3 or ss4a*]
How old were you when you first started to smoke on a daily basis?

8 eight years of age or younger
9-96 enter age when started to smoke daily
98 don't know 99 refused

>ss5a< [*only if former smoker, yes at ss4a but not at all at ss3*]
How many years ago did you quit smoking?

0 less than one year ago
1-80 enter number of years
98 don't know 99 refused

>ss5b< [*only if less than one year at ss5b*]
How many months ago did you quit smoking?

0 less than one month
1-11 enter number of months
98 don't know 99 refused

>ss6< [*daily smokers only, ss3 = 1*]
How many cigarettes do you usually smoke each day?

1-300 enter number of cigarettes smoked
998 don't know 999 refused

>ss7< [*daily & occasional smokers, ss3 = 1 or 3*]
How soon after you first wake up do you smoke your first cigarette: would you say

1 less than six minutes after you wake up
3 between 6 and 30 minutes
5 between 31 and 60 minutes

7 more than 60 minutes
8 don't know 9 refused

>ss8<[*skip to next section if less than 50 at ss2*]
At the present time do you smoke PIPES, CIGARS OR CIGARILLOS:

1 daily
3 occasionally
5 not at all
8 don't know 9 refused

>ss9< [*only if smoke cigars daily or occasionally*]
How many PIPES, CIGARS OR CIGARILLOS do you usually smoke each day?

1-30 enter number of pipes, cigars, cigarillos
97 varies, some days smoke, some days do not
98 don't know 99 refused

>cig_flag<

1 never cigarette smoker
2 former cigarette smoker
3 current occasional cigarette smoker
4 current daily cigarette smoker

HOUSEHOLD COMPOSITION & SMOKING STATUS OF OTHER HH MEMBERS

>hc1<
I want to ask some questions about other people who live with you. First, INCLUDING YOURSELF, how many people live in your home, be sure to include all children, grandparents, and any other people who live with you in your home.

1 R is only person in the household
2-20 enter number of people
98 don't know 99 refused

[*note dk and refused at hc1 treated as one person hhs*]

>hc2< [*not asked if one person hh*]
INCLUDING YOURSELF, how many of these people, are 18 years of age or older?

1 R is only person in household 18 or older
2-20 enter number of people over 18
98 don't know 99 refused

>hc3< [*not asked if one person hh*]
(INCLUDING YOURSELF), how many of the people 18 YEARS OF AGE AND OLDER in your home smoke cigarettes?

0 none/no one smokes
1-20 enter # of people (including R) 18 and older who smoke cigarettes
98 don't know 99 refused

>hc4< [*not asked if all hh accounted for*]
How many people in your household are between 12 and 17 years of age?

0-20 enter number of people between 12 and 17
98 don't know 99 refused

>hc5a< [*if only one person in hh 12 or older*]
Does this person smoke cigarettes?

1 yes
5 no
8 don't know 9 refused

>hc5b< [*if two or more persons 12 or older in hh*]
How many of the people 12 to 17 years of age smoke cigarettes?

0-20 enter number of people between 12 and 17
98 don't know 99 refused

>hc6< [*only asked if smokers in hh*]
(Do you) (Do any) (Do you or any of the others smokers in your home) smoke cigarettes INSIDE your home?

1 yes
5 no
8 don't know 9 refused

>HH_TYPE< [*determined by answers thus far*]

type=1 non smoking household, no kids
type=2 non smoking household, kids
type=3 smoking household (some adults smoke), no kids
type=4 smoking household (some adults smoke), kids
type=5 smoking household (all adults smoke), no kids
type=6 smoking household (all adults smoke), kids

>RANDOM<
[*CATI code here to determine if interview is terminated at this point (short form) or if interview continues (long form) Interviewer continues for about 2 of every 3 households (see variable QTYPE). Most of the terminations are for the first two hh types. Any notations, from this point on, that indicates all respondents asked the question/section means all respondents completing the long form were asked the question/section*]

========== **ATTITUDES** ==========

>a1< [*all respondents asked this section*]
Please tell me if you Strongly agree, somewhat agree, somewhat disagree, or strongly disagree with the following statements. First: restrictions have gone too far, and smokers need to start standing up for their rights.

1 strongly agree
3 somewhat agree
5 somewhat disagree
7 strongly disagree
8 don't know 9 refused

>a2<
Nonsmokers have the right to a smoke free environment?

1 strongly agree
3 somewhat agree
5 somewhat disagree
7 strongly disagree
8 don't know 9 refused

>a3<
Family doctors should advise parents not to smoke around children?

1 strongly agree
3 somewhat agree
5 somewhat disagree
7 strongly disagree
8 don't know 9 refused

>a4<
Smoking habits of parents should be taken into account when deciding child custody cases?

1 strongly agree
3 somewhat agree
5 somewhat disagree
7 strongly disagree
8 don't know 9 refused

>a5<
Parents have the right to decide for themselves whether OR NOT they smoke around their children?

1 strongly agree
3 somewhat agree
5 somewhat disagree
7 strongly disagree
8 don't know 9 refused

>a6<
There should be a law that says parents can't smoke INSIDE their homes if children are living there?

1 strongly agree
3 somewhat agree
5 somewhat disagree
7 strongly disagree
8 don't know 9 refused

>a7<
There should be a law that says parents can't smoke inside their car if children are present?

1 strongly agree
3 somewhat agree
5 somewhat disagree
7 strongly disagree
8 don't know 9 refused

>a8< [*question cut*]

>a9<
Children get sick more often when people smoke regularly around them?

1 strongly agree
3 somewhat agree
5 somewhat disagree
7 strongly disagree
8 don't know 9 refused

>a10< [question cut]

======= BEHAVIOURS TO REDUCE ETS IN THE HOME =======

>b1< [*skips hh where we have been told no one smokes inside*]
Is there anything done/you personally do to try to reduce or eliminate second hand smoke in your home?

1 yes
5 no (includes why should I/we everyone smokes)
7 R says they are not in a position to do anything
0 no need to/no one smokes in the home
8 don't know 9 refused

[*Yes continues to b2 all others go to next section*]

>b2< [*only asked of smokers, non smokers skip to b13*]
Can you tell me whether you PERSONALLY do any of the following to try to reduce second hand smoke in your home. First what about smoking outside when someone else is in the home, do you do this all of the time, most of the time, some of the time, or not at all?

1 all of the time
3 most of the time
5 some of the time
7 not at all
0 no need to/no one smokes in the home
8 don't know 9 refused

[*Answers of 0, 1, dk and refused here and next seven questions skip to next section.*]

>b3< [*asked of smokers who try to reduce/eliminate ETS*]
What about not smoking, or going outdoors to smoke, when children are IN THE HOME?

1 all of the time
3 most of the time
5 some of the time
7 not at all
0 no need to/no one smokes in the home
8 don't know 9 refused

>b4< [*asked of smokers who try to reduce/eliminate ETS*]
Not smoking when children are IN THE SAME ROOM?

1 all of the time
3 most of the time
5 some of the time
7 not at all

0 no need to/no one smokes in the home
8 don't know 9 refused

>b5< [*asked of smokers who try to reduce/eliminate ETS*]
Restricting your smoking to a room or certain part of the home?

1 all of the time
3 most of the time
5 some of the time
7 not at all
0 no need to/no one smokes in the home
8 don't know 9 refused

>b6< [*asked of smokers who try to reduce/eliminate ETS*]
Opening windows or doors?

1 all of the time
3 most of the time
5 some of the time
7 not at all
0 no need to/no one smokes in the home
8 don't know 9 refused

>b7< [*asked of smokers who try to reduce/eliminate ETS*]
Blowing smoke directly out a window or door?

1 all of the time
3 most of the time
5 some of the time
7 not at all
0 no need to/no one smokes in the home
8 don't know 9 refused

>b8< [*asked of smokers who try to reduce/eliminate ETS*]
Using fans?

1 all of the time
3 most of the time
5 some of the time
7 not at all
0 no need to/no one smokes in the home
8 don't know 9 refused

>b9< [item *added 9/401, asked of smokers who try to reduce/eliminate ETS*]
Using air purifiers?

1 all of the time
3 most of the time
5 some of the time
7 not at all
0 no need to/no one smokes in the home
8 don't know 9 refused

>b10< [*asked of smokers who try to reduce/eliminate ETS*]
Is there anything else you personally do to reduce second hand smoke in your home?

1 yes

5 no
8 don't know 9 refused

>b11< [*only if yes at b10*]
What do you do?

1 Enter text
98 don't know 99 refused

>b12< [*if answer at b11*]
And do you do this:

1 all of the time
2 most of the time
3 some of the time
4 not very often
8 don't know 9 refused

>b13< [*nonsmokers only, smokers skip to goto next section*]
Can you tell me whether any of the following things are done in your home to try to reduce second hand smoke. First, do smokers go outside to smoke when someone else is in the home?

1 all of the time [*skip to next section*]
3 most of the time
5 some of time
7 not very often
0 no one smokes in the home/no visitors who smokes
8 don't know 9 refused

[*Answers of 0 for b13 tob21 skip to next section*]

>b14< [*nonsmokers only*]
What about smokers not smoking, or going outside to smoke, when children are IN THE HOME?

1 all of the time
3 most of the time
5 some of time
7 not very often
0 no one smokes in the home
8 don't know 9 refused

>b15< [*nonsmokers only*]
What about smokers not smoking when children are IN THE SAME ROOM?

1 all of the time
3 most of the time
5 some of the time
7 not very often
0 no one smokes in the home
8 don't know 9 refused

>b16< [*nonsmokers only*]
What about smoking only in one room or only smoking in a certain part of the home?

1 all of the time
3 most of the time

5 some of the time
7 not very often
0 no one smokes in the home
8 don't know 9 refused

>b17< [*nonsmokers only*]
Opening windows or doors?

1 all of the time
3 most of the time
5 some of the time
7 not very often
0 no one smokes in the home
8 don't know 9 refused

>b18< [*nonsmokers only*]
Blowing smoke directly out a window or door?

1 all of the time
3 most of the time
5 some of the time
7 not very often
0 no one smokes in the home
8 don't know 9 refused

>b19< [*nonsmokers only*]
Removing ashtrays from sight?

1 all of the time
3 most of the time
5 some of the time
7 not very often
0 no one smokes in the home
8 don't know 9 refused

>b20< [*nonsmokers only*]
Using fans?

1 all of the time
3 most of the time
5 some of the time
7 not very often
0 no one smokes in the home
8 don't know 9 refused

>b21< [*nonsmokers only*]
Using air purifiers?

1 all of the time
3 most of the time
5 some of the time
7 not very often
0 no one smokes in the home
8 don't know 9 refused

>b22< [*nonsmokers only*]

Is there anything else that you have done to reduce your exposure to second hand smoke?

1 yes
5 no
8 don't know 9 refused

>b23< [*only if something else done at b22*]
What is it?

1 Enter text
98 don't know 99 refused

>b24< [*only if answer at b23*]
Is this done:

1 all of the time
3 most of the time
5 some of the time
7 not very often
8 don't know 9 refused

>b25< [*only asked of nonsmokers*]
What about you, do you go to another room when someone smokes in the home?
1 all of the time
2 most of the time
5 some of the time
7 not very often
8 don't know 9 refused

== EFFECTIVENESS OF STRATEGIES USED TO REDUCE ETS ==

>ef1< [*everyone gets asked ef1*]
Please tell me how effective you think the following methods are at reducing the amount of second hand smoke in the home. First, what about smoking only in a certain room or part of the home? Do you think this reduces second hand smoke a lot, reduces it a little, or makes no difference in the amount of second hand smoke that others in the home are exposed to?

1 reduces a lot
3 reduces a little
5 makes no difference
0 depends/other (specify)
8 don't know 9 refused

>ef2<
Opening windows or doors?

1 reduces a lot
3 reduces a little
5 makes no difference
0 depends/other (specify)
8 don't know 9 refused

>ef3<
What about blowing smoke directly out a window or door?

1 reduces a lot
3 reduces a little
5 makes no difference
0 depends/other (specify)
8 don't know 9 refused

>ef4<
What about waiting for one hour before using a room that someone has been smoking in?

1 reduces a lot
3 reduces a little
5 makes no difference
0 depends/other (specify)
8 don't know 9 refused

>ef5<
Using a fan?

1 reduces a lot
3 reduces a little
5 makes no difference
0 depends/other (specify)
8 don't know 9 refused

========== **HEALTH RISKS RESULTING FROM ETS** =========

>hr1< [*section asked of all respondents*]
I am going to read you a list of Health problems. For each, please tell me if you think OTHER PEOPLE'S smoking is one cause, may be a cause, or is not a cause of the problem. First, lung cancer in nonsmokers. Do you think other people's smoking is:

1 is one cause
3 may be a cause
5 is not a cause
8 don't know 9 refused

>hr2<
What about heart attacks in nonsmokers?

1 is one cause
3 may be a cause
5 is not a cause
8 don't know 9 refused

>hr3<
What about breast cancer in nonsmokers?

1 is one cause
3 may be a cause
5 is not a cause
7 R volunteers depends on gender
8 don't know 9 refused

>hr4<
And what about chest problems in children?

1 is one cause
3 may be a cause
5 is not a cause
8 don't know 9 refused

>hr5<
Problems in children's ears?

1 is one cause
3 may be a cause
5 is not a cause
8 don't know 9 refused

>hr6<
Crib death or sudden infant death syndrome (SIDS)?

1 is one cause
3 may be a cause
5 is not a cause
7 depends
8 don't know 9 refused

>hr7a<
Do you have a family doctor, or a doctor you see on a regular basis?

1 yes
5 no
8 don't know 9 refused

>hr7b< [*only if not have a family doctor*]
Have you SEEN a doctor for a check up or other non-emergency reason in the last 12 months?

1 yes
5 no
8 don't know 9 refused

>hr8a< [*asked if R has seen a doctor and is smoker*]
Did the doctor talk / Has this doctor EVER talked to you about your smoking?

1 yes
5 no
8 don't know 9 refused

>hr8b< [*if doctor has talked to R about smoking*]
Was this in the last 12 months?

1 yes
5 no
8 don't know 9 refused

>hr9a< [*if doctor has talked to R about smoking and 2 or more persons in hh*]
Did the doctor talk / Has this doctor EVER talked to you about not smoking inside your household?

1 yes
5 no

8 don't know 9 refused

>hr9b< [*if doctor talked to R about smoking inside hh*]
Was this in the last 12 months?

1 yes
5 no
8 don't know 9 refused

>hr10a< [*only asked if a smoking HH and R not a smoker*]
Has this doctor ever talked to you about making sure that there is no smoking in your household?

1 yes
5 no
8 don't know 9 refused

>hr10b< [*if doctor talked to R about smoking inside hh in last 12 months*]
Was this in the last 12 months?

1 yes
5 no
8 don't know 9 refused

========== **LEGAL PROTECTION** ==========

>lp1< [*everyone gets asked legal protection*]
I want to ask about a situation where a child's asthma is made worse because the parents smoke around the child. In this case the parents have been told by doctors and child care authorities, that their smoking is harming their child. In this type of situation, do you think the court should order the parents not to smoke in their home?

1 yes
5 no
7 r volunteers other response (specify)
8 don't know 9 refused

>lp2<
Do you feel very strongly or somewhat strongly about this?

1 very strongly
5 somewhat strongly
8 don't know 9 refused

========== **SOCIODEMOGRAPHICS** ==========

>age<
Finally, these last questions are for classification purposes only. First, in what year were you born?

1900-1983 enter year
9998 don't know 9999 refused

>edu<
What is the highest level of education you have completed?

1 no schooling

2 some elementary school
3 completed elementary school
4 some high school/junior high
5 completed high school
6 some community college (College Classique, CEGEP)
7 some technical school
8 completed community college (College Classique, CEGEP)
9 completed technical school
10 some University
11 completed Bachelor's Degree (Arts, Science, Eng, etc.)
12 post graduate Training: MA, MSc, MLS, MSW, MBA, etc.
13 post graduate Training: PhD, "doctorate"
14 professional Degree (Law, Medicine, Dentistry)
98 don't know 99 refused

>mar1<
At the present are you:

1 married (includes remarriages)
2 living with a partner
3 widowed
4 divorced
5 separated
6 never married (single)
8 don't know 9 refused

>children< [*skip if no children*]
How many people under 18 years of age live in your household?

0 none
1-12 enter number
13 thirteen or more children
99 refused

>AGE<
Could you tell me how old that child is/Could you give us the ages of the children who live with you, from oldest to youngest?

kid1 Enter age of child/first child.
kid2 Enter age of 2nd child
kid3 Enter age of 3rd child
kid4 Enter age of 4th child
kid5 Enter age of 5th child
kid6 Enter age of 6th child
kid7 Enter age of 7th child
kid8 Enter age of 8th child
kid9 Enter age of 9th child
kid10 Enter age of 10th child

>home_type<
Which of the following best describes your home, is it a

1 single detached house
2 semi detached (includes duplex, triplex, fourplex)
3 townhouse/row house/includes condo's with this structure
4 apartment/condo's with apartment building like structures

5 room or flat in a house
0 something else (specify)
98 don't know 99 refused

>language1<
What is the language you first learned to speak and still understand?

1 English
2 French
3 R answers English and French
4 Chinese
5 Greek
6 Italian
7 Portuguese
0 Other (specify)
98 don't know 99 refused

>language2<
And what language do you speak MOST OFTEN at home?

see codes on language1

>ethnicity1<
To what ethnic or cultural group do you belong?

1 Canadian	20 Guyanese	39 Filipino
2 Australian	21 Haitian	40 Polish
3 Austrian	22 Holland	41 Portuguese
4 Bahamian	23 Hungarian	42 Russian
5 Bangla.	24 Irish	43 Sottish
6 Blk/African	25 Italian	44 Serbia
7 British	26 Indian	45 Sikh
8 Chinese	27 Israeli	46 Somalia
9 Croatian	28 Jamaican	47 Slovakian
10 Czech	29 Japanese	48 Spanish
11 Danish	30 Jewish.	49 Sri Lanka
12 Dutch	31 Korean	50 Swedish
13 England.	32 Lebanese	51 Tamil
14 El Sal.	33 Macedonian	52 Trinidadian
15 Ethiopian	34 New Zea	53 Ukrainian
16 French	35 Nether	54 Vietnamese
17 Finnish	36 Nigerian	55 Yugoslavian
18 German	37 Norwegian	56 Welsh
19 Greek	38 Pakistani	95 Inuit, Metis, Aboriginal, Native
97 other	98 don't know	99 refused

>ethnicity2< [*only if Canadian in ethnicity1*]
In addition to being Canadian to what ethnic or cultural group did you, or your ancestors belong on first coming to this continent?

if second time Canadian mentioned, goto language
see response list at ethnicty1

>ethnicity3<
INTERVIEWER: enter SECOND mentioned group here.

97 No SECOND Mention goto language
see response list at ethncity1

>ethnicity4<
INTERVIEWER: enter THIRD mentioned group here.

97 No Third Mention goto language
see response list at ethnicty1

>ethnicity5< [define <d><98>][define <r><99>][define <s><0>]
INTERVIEWER: enter FOURTH mentioned group here.

97 No Fourth Mention
see response at ethnicity1

>employment<
What is your present job status:

0 Self employed
1 Employed full-time (30 or more hrs/week)
2 Employed part-time (less than 30hrs/week)
3 Unemployed (out of work but looking for work)
4 Student--employed part-time or full-time
5 Student--not employed
6 Retired
7 Homemaker
97 Other (Specify) 98 don't know 99 refused

>inc1<
Could you please tell me how much income YOU and OTHER MEMBERS of your household received in the year ending December 31st 2000, before taxes? Please include income from ALL sources such as savings, pensions, rent, and unemployment insurance as well as wages. TO THE NEAREST THOUSAND DOLLARS, what was your TOTAL HOUSEHOLD INCOME before taxes and other deductions were made?

enter full amount (include thousands)
999998 don't know 999999 refused

>inc2< [*if dk or refused at inc1*]
We don't need the exact amount; could you tell me which of these broad categories it falls into...

1...less than $20,000
2...between $20,000 and $30,000 ($29,999.99)
3...between $30,000 and $40,000
4...between $40,000 and $50,000
5...between $50,000 and $60,000
6...between $60,000 and $70,000
7...between $70,000 and $80,000
8...between $80,000 and $90,000
9...between $90,000 and $100,000
10...between $100,000 and $120,000

11...between $120,000 and $150,000, or
12...more than $150,000?

98 don't know 99 refused

>inc3< [*if refused at inc2 or one person hh skip to FSA*]
What about YOU PERSONALLY, how much income did YOU receive in the year ending December 31st 2000, before taxes? Please include income from ALL sources such as savings, pensions, rent, and employment insurance as well as wages. TO THE NEAREST THOUSAND DOLLARS, what was your TOTAL PERSONAL INCOME before taxes and other deductions were made?
enter full amount (include thousands)
999998 don't know 999999 refused

>inc4< [*only if dk and refused at inc3*]
We don't need the exact amount; could you tell me which of these broad categories it falls into...
see categories at inc3

>FSA< postal code collection here